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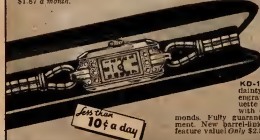
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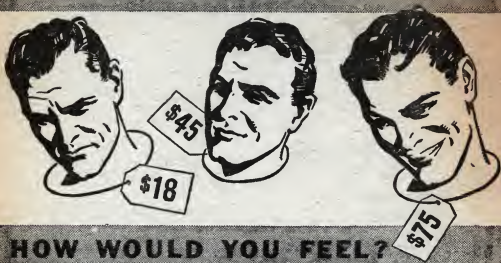
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VOLUME XV
NUMBER 6

ASTOUNDING STORIES

AUGUST
1935

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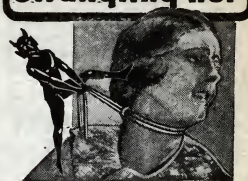
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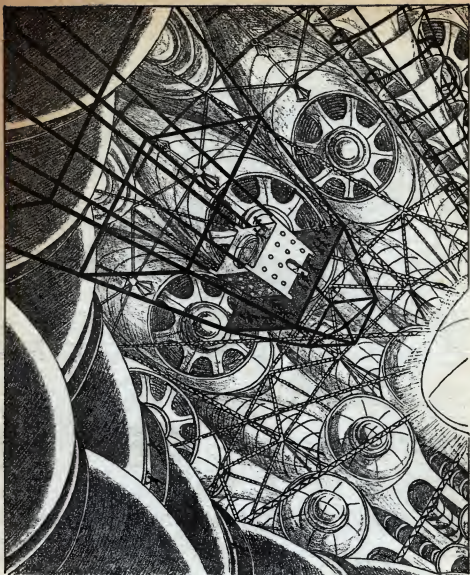
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20x4-40-21	9.95	0.80	30x8-20	3.75	1.40
20x4-40-21	10.00	0.80	30x8-20	3.75	1.40

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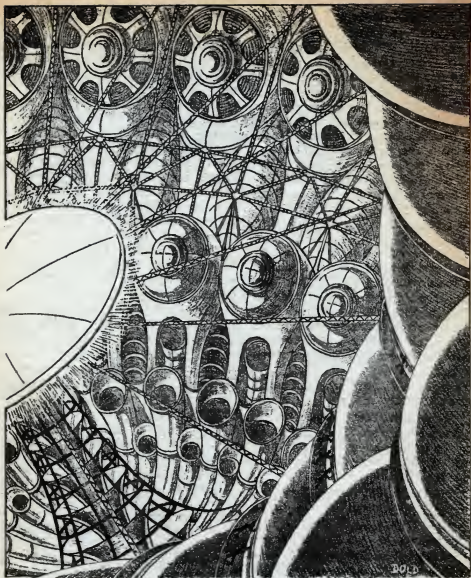


"We're off," said Thorn. "Flying up through size. Yet we are microscopically small. If we do not fail, our whole Galaxy will be less to us than the point of a pin."

The Galactic Circle

A great thought-variant novel

by JACK WILLIAMSON



THIS was going to be a lark. Rodney Trent happily paid off the taxi that had brought him from the interurban station, and made a note for his expense account. Then he turned briskly toward the imposing gate of the famous Morning Slope Laboratory where for ten years Dr. Jarvis Thorn had made half the world's biggest scientific news.

Fresh in Rod's mind were the chief's orders:

"Trent, this is the biggest chance a reporter ever had—ever will have. Exclusive, see?—exclusive! In Garrick's line. But Garrick's afraid to go. Says so. If you're afraid, speak up, Trent."

"That's all right," Rod assured him. "But I'd like to know a little better what this is all about."

"That's precisely what you're going to find out," the grizzled old man reminded him. "Thorn's no headline hunter. Nine years ago, you remember, Cross was already leasing power sites, before the story broke on atomic energy. 'Thorn called me this morning—himself. Here's what he said:

"Send a man out to Morning Slope. I want a competent journalist, to witness and report an experiment. Possibly it will be the greatest scientific expedition of history. I believe it will be. That's why I want a popular journalist's account of it preserved, for history.

"On the other hand, we may fail. My friend Will Starbuck believes he has mathematical proof that we must fail. If we do, your reporter will be killed, together with myself and Starbuck and about a hundred other people who are taking part in the experiment. Have you a good man willing to take the chance?"

"I told him I'd come myself, if necessary, and Thorn replied:

"Your man should be here at ten o'clock this morning. If I am right, he may be back at noon, or it may be a year. If Starbuck is right—he won't come back.'"

"And that's all?" inquired Rod.

"Except that I first put Garrick on the story. Garrick knows Starbuck. He called him on the phone. And Garrick isn't going. A suicidal project, he says.

"There's one story already sizzling, Trent. Starbuck's younger than Thorn, of course, but every bit as keen. The one man who has added anything to Thorn's work in intra-atomic dynamics. And they're close friends, though they've locked horns a dozen times before.

"Well, this is the biggest chance you're apt to have, Trent—an exclusive invite to Thorn's big show. It's better than a grand-stand seat at an earth-

quake. Muff it—and I'll take you apart."

Rodney Trent, standing outside the guarded entrance, wasn't worried about muffing anything. Several years of leg work had taught him that newspapermen can live without worry.

A long car glided in and stopped squarely in front of the gate. There were two passengers. The long-bodied gaunt man, with the round melon of a paunch, the thin nose, the odd lock of dark hair on top of a bare bald head, Rod recognized as Morrison Cross—Thorn's father-in-law and master of Cross Power, Inc.

The other would be his secretary, perhaps. They walked past the uniformed guard, the chauffeur following, limping under heavy bags.

Rod followed them, eagerly. If old Cross came into it, the story ought to be a peach. Cross was probably the richest man on earth. Cross Power, the sole licensee under Thorn's patents, merchandised atomic power throughout the world, at prices that cut the throat of competition.

OLD CROSS was hard, no doubt of that. He had crushed the coal, oil, and water-power interests without mercy. He kept an iron hand on his own employees. Grimly, he defied the liberals who were always exposing the "power trust," and urging consumer coöperation, or rate-setting, or government ownership.

Old Cross hadn't even a decent nod for the man at the gate. But that man, respectfully firm, stopped Rodney.

"Sorry, sir, but the laboratory isn't open to visitors."

"But Dr. Thorn sent for me. I'm from the *Times*."

"You are? We were expecting Mr. Garrick."

"I'm in Garrick's place. My credentials."

He examined the press card minutely, and nodded.

"Sorry, Mr. Trent. My orders are very strict." He was thawing a little. "Garrick didn't want to come?"

"No. But what's coming off, anyhow? This all seems darn mysterious."

The guard's lips tightened.

"I can't talk, Mr. Trent. You'll find out inside." He shook his head. "Garrick has good judgment, if you ask me. Dr. Starbuck told me himself that they'll never come back."

In spite of himself, Rod was a little impressed. And his curiosity was being strung to a high pitch indeed.

He walked into an empty room, vast as an airplane hangar. The huge rear doors, opened wide, gave a view of the grounds within the white fence, scattered with trim gray concrete buildings, studded with steel towers. Tall elms, beyond refreshing lawns, screened Thorn's long, red-tiled residence.

Rod's mind was on the riddle of the experiment, but a quick inspection of this building gave him no clue. It looked as if planned to hold some machine as bulky as a dirigible—but, if so, that machine was gone.

Down the broad, vacant floor, he walked to join a group of people standing beside a pile of luggage. The hundred, he supposed, about to take part in the experiment. Most of them in overalls or white jackets he took to be employees of Thorn's. Several were apparently visitors.

In the first moment, he sensed the current of anxious puzzled apprehension running among them.

Morrison Cross was standing a little apart, thin hands locked over his paunch, yellowish eyes staring intently down at the intricate gold head of his heavy cane. Rod recognized several of the others: among them the physicist, Edwards, and Weir, the astronomer. A few were obviously college students.

Smiling guilelessly, Rod bore down

on the group in search of information.

"Smoke?" he greeted Morrison Cross, offering an expensive cigar. "I wonder when the show begins? I suppose you're helping finance the experiment, Mr. Cross?"

The yellowish, hard eyes measured him shrewdly. Morrison Cross accepted the cigar, critically sniffed it, put it carefully in his vest pocket.

"Humph, young man," he said.

Rod drifted on, making a mental note for the expense account, still smiling.

The man who had come in with Morrison Cross was equally communicative. Speaking with an elaborate Oxford accent, he politely refused the cigar. He gave Rod a card printed, "Mr. Cyril Culpepper," and bearing, below, the minute inscription, "Secretary to Mr. Morrison Cross."

The astronomer Weir, a bald little man, smiling warmly, seemed glad to talk without recompense in nicotine.

"Something fundamentally new, I'm told," he said. "The outcome, I gather, of Thorn's splendid work in atomic dynamics." He admitted, "Yes, I was warned of some physical danger—but where could I have left those spectacles?"

The willowy, platinum-headed girl in the white sports sweater confessed to being Thorn's secretary. Melanie Dean was the name. Rod rather liked her.

"Yes, I know about the experiment," she admitted, with a dazzling smile. But she couldn't think of discussing Thorn's work. Yes, she was aware of danger, but she was always with Dr. Thorn.

Rod approached a couple whom he classified as college students—a thin, pale, stooped young man, with washed-out, near-sighted blue eyes; and a vigorously athletic young woman, taller than he, with a stern simplicity of feature.

"Yes, we are science students under Dr. Edwards," the young man said, in an anemic voice. "He got the invitation for Martha Lee and myself."

"No, we don't know what's going to happen," Martha Lee took the next question. "Dr. Edwards didn't know—but anything Thorn does is sure to be important.

"Yes," she said, "Dr. Edwards was told that we might never come back." She looked at the young man with a peculiar pathos in her wide-set, hazel eyes. "We don't care, do we, Paul?"

Paul's narrow shoulders made a little defiant shrug.

"No," he piped stoutly, "we aren't coming back."

Rod looked again at the defiant resolution in Paul's feeble, emasculated body, at Martha Lee's mannishly robust grimness. Their words assumed a tragic implication.

Then Rod saw Will Starbuck, standing alone just outside the great doors. He knew Starbuck slightly—Garrick had once introduced them.

Lean and tall, Starbuck was in his early thirties. He wore a quiet brown sack suit. His blond head was bare to the morning sun. His face was clean-featured, tanned, pleasing. The clear fresh youth of a college athlete was matured in him, and accentuated by the purposeful firmness of his long mouth and the startling dynamic vigor of his gray eyes.

He was standing beside the border of lilies that edged the rich carpet of the lawn, looking down at the scarlet blooms. To Rod's pleasure, he seemed disposed to talk.

"Look at these cannas, Trent," he said. "Gorgeous things; aren't they?" He touched one flaming petal with a reverent finger tip. "We should enjoy them well."

"Can you tell me, Dr. Starbuck, about this experiment——"

The grave eyes stopped him.

"It's Thorn's show," said Starbuck. "Let's wait for him to make his own ballyhoo." And he nodded at the red-roofed building. "Thorn will be here

in a few minutes, with his apparatus."

Rod was puzzled. The rest of the people waiting seemed anxious, apprehensive, keyed up. Starbuck, however, was perfectly calm, apparently untroubled—yet he was the very prophet of disaster.

Rod was beginning another question, when Starbuck spoke again of the lilies.

"They're like scarlet banners against the grass. We must enjoy them, Trent. They're the last flowers that you and I shall ever see."

II.

DR. JARVIS THORN at last came stalking across the lawn, carrying in his right hand some small object that flashed in the sun. Two women accompanied him—the two daughters of old Morrison Cross.

Madeline, the elder, had been seven years Thorn's wife. Her dark hair was drawn smoothly back from a placidly somber face that shone with a quiet loveliness. Her dark eyes were shadowed with some sad and hidden thing.

Ellen Cross, nearly ten years younger, was a vigorous redhead. Athletic, vivacious, she possessed all the vitality her sister lacked. She was not much spoiled, Rod thought, by being the favorite daughter of the world's richest man.

Jarvis Thorn, himself, was a big man. Tall as Will Starbuck, he was massively heavy. He was a dozen years older than Starbuck. Gray had touched his dark hair; his wide face was finely lined. The hard story of his driven years was written in the tired little sag of his wide shoulders, in the weary dullness of his eyes.

At the moment, however, Rod was interested less in people than in the flashing object in Thorn's hand. He hardly noted the eager smile that lit Will Starbuck's face, as he went to meet

Ellen Cross. He missed the quick, significant glance of greeting that passed between Madeline and thin, reedy Culpepper, and the radiant smile of welcome bestowed upon Jarvis Thorn by his platinum-haired secretary.

The flashing thing was a little oblong case of white metal, bound at the corners in brown leather. Thorn carried it as if it contained something heavy.

A restless anxiety swept the crowd a little toward Thorn. Some one called, "Ready, doctor?" And old Morrison Cross, leaning forward on the gold head of his cane, rapped out: "Come, Jarvis. You've kept us in the dark long enough. Let's have it."

Thorn planted himself heavily just behind the row of flaming cannas, saying, in his deep, weary, scholar's voice:

"Well, Morrie, I'm ready to tell you now."

"It had better be something big," said old Cross, "seeing that it has taken ten years of your time, and thirty millions of my money."

Thorn was moved to a brief retort.

"I've made you a hundred times that much, Morrie—and you know it."

Queerly, then, the heaviness, the weariness, was all swept out of his face, by his consuming interest in the thing he had to say. It seemed to Rod, watching, that years fell from him. A new fire lit his dark, deep-set eyes.

"I have invited each one of you here to take part in an experiment," he said, and a sudden enthusiasm rang in his words. "Usually I have worked alone. But this thing has such promise that it would be criminal not to share it. I have included among you, therefore, the representatives of many branches of knowledge—even a journalist."

"Each one of you has been warned," Thorn went on, "that this experiment is dangerous. It may cost the lives of all who take part, perhaps in sudden violence, perhaps slowly, or under some

terrible circumstances we cannot yet picture.

"It isn't too late to withdraw. If any one is doubtful, let him speak."

He paused, while his eager eyes moved across the hundred people between him and the concrete building. From tall, dour Morrison Cross, at one side of the group, to his bright-eyed daughter Ellen, at the other—no one spoke.

Deliberating a moment, clothing his thought, he looked down at the little metal case still swinging in his hand. Then he began slowly, as if searching for an easy way for his audience, among unfamiliar conceptions.

"Size—I ask you to think of size. Each of us has grown up from a cell invisibly small. The world shrinks, as we come up from that cell. All about us in space are things larger than we are, and smaller: mountains and grains of sand, suns and atoms.

"Every one of us must have toyed in fancy with the idea of changing his size. Folk lore is crowded with giants and dwarfs. Fairy tales are filled with magic belts and wands that make men larger or smaller.

"'Alice in Wonderland' is one of a thousand literary versions of the idea. Some are pure fantasy. A few are based upon surprisingly sound scientific conceptions. Most of the latter variety deal with adventures to imaginary worlds upon atoms or electrons. A few deal with voyages in the other direction, to a 'superuniverse,' in which suns or perhaps galaxies are atoms."

"Eh, Jarvis!" rapped out old Morrison Cross. "So you're taking us to Wonderland—with my thirty millions."

"I am offering you the most wonderful adventure that men were ever privileged to undertake."

Thorn was warming to his subject. He plunged on:

"All that I have accomplished was implicit in my first discoveries ten years

ago—the discoveries that unlocked the atom, so that Morrie, here, could make his millions.

"Implicit—yet it has taken ten years, and Morrie's millions, to drag it out, transformed it into proven equations and workable mechanisms.

"Atoms are energy. Men have known that for fifty years. Atoms are electrons and their balancing protons. Electrons and protons are electricity, energy.

"Atoms are breaking up before our eyes. Uranium, radium, lead—and power incredible. Radium will melt its own weight of ice every hour; after sixteen centuries the radium is only half used up, the rest is still active. And the smallest fraction of the radium's total energy is given off. Most of it stays locked in the lead.

"I can't claim much credit for my part in it. Brilliant men—and one woman—had opened the way for me. Soddy and Rutherford and Moseley, Planck and Einstein, Bohr and De Broglie and Schrodinger—and Mme. Curie. Step by step—radioactivity, the quantum theory, wave mechanics.

"It just happened that my step was the last. I was the lucky one, the one to reach the door. Or perhaps Morrie, here, was the lucky one; he's been selling the power of the atom.

"The one-stage converter, you know, that Morrie uses in his power houses, doesn't transform matter completely into energy. Any of various heavy elements can be broken down, but the end products, besides heat and electrical energy, are always helium gas and some other heavy element lower in the scale."

Thorn's big hand made a slow gesture of emphasis.

"Since, I've done better. The new four-stage converter breaks down the end products, again and again. It disintegrates uranium, and delivers pure energy with a loss of less than one part

in ten thousand. The uranium is used up. Nothing is left."

Here, already, thought Rod, were headlines. Matter annihilated!

"Now let's come back to the matter of size," Thorn went on. "Atoms make up everything—this grass, your body, mine. And atoms, to put it crudely, are made of electricity. Increase the electrical energy, expand the size, of every atom in your body—and you would be larger."

"Wonderland!" snorted old Morrison Cross, with a scornful gesture of his cane.

"No, Morrie, it isn't that simple. The electron has a definite mass—the weight, one might put it, of electricity. The positive particle, the proton, is far smaller—and 1,845 times as heavy. When an atom absorbs energy in the ordinary way, in fixed amounts—quanta—the electronic orbits become larger. But the substance merely becomes hotter.

"I had to look for another way. Now the atom is beyond the concepts of a three-dimensional physics. Its representation requires as many dimensions as the electronic orbits have degrees of freedom. And it has been known for years that the mass of an electron increases with its orbital velocity. That seemed proof enough that power could increase the mass of atoms.

"I got nowhere until I attacked the problem through control in another dimension—time. By what amounts, in nontechnical language, to a compression in time, I have been able to increase at will the mass and the extension of atoms—and that without disturbing their structure, or their arrangement in the substance they compose.

"Likewise, by a similar expansion in time, I can decrease both the mass and extension of any substance."

Jarvis Thorn stopped for a moment, while his burning, deep-shaded eyes studied the response to this statement.

Deepest interest lit every face. Weir, the bald astigmatic little astronomer, was leaning forward oddly, one hand cupped at his ear, his mouth falling open.

THERE WAS no incredulity. Thorn's position was too secure, his past work too brilliantly successful, his present argument too eagerly convincing—to allow of disbelief. Breathless silence urged him to continue.

"Yes," he went on, almost casually, "I can at will make any object—even a man—larger or smaller. It takes power, but, because of the time control, much less power than theoretical considerations first led me to assume. And, in the new four-stage converter, we have a source of practically limitless power.

"I might add one fact that surprised me. The atoms of our world are normally in a state of equilibrium. I had anticipated that vast amounts of power would be required to increase size, and that power would be liberated when size is decreased. But the equilibrium is perfect. The energy required for a similar change in either direction is precisely the same."

Morrison Cross thumped his cane on the ground.

"You actually mean this, Jarvis? You can make me taller? Or make me as small as a circus dwarf?"

"I can, Morrie," said Thorn, gravely. "And more." He spoke to the rest. "I've called all of you here, to go with me upon a voyage of exploration—in size."

"A voyage!" It was the slender young student, Paul, boyishly eager. "Where's the ship?"

Thorn held up the metal case in his hands. His listeners surged forward in breathless anticipation. He lifted a broad hand to halt them.

"If you please," he called. "There's one thing more to be discussed, before

we go further. Dr. William Starbuck, here, you all know for a very able man, distinguished for his recent work in the physics of the atom. I may say that he carried on in one direction from the results of my first discoveries, while I took another.

"Starbuck is the one man, outside the laboratory, with whom I have discussed this experiment. His opinion of our chance for success is very different from mine—and he has an equal right to state it. In justice to him and to yourselves, I ask you to listen to what he has to say. All right, Will."

Thorn stepped through the row of scarlet cannas to join the others. After a moment, Will Starbuck came forward from beside Ellen Cross. His pleasant, tanned face was smiling a little, but his gray, curiously dynamic eyes were solemn.

"I won't give you a complete scientific comparison of my findings with those of Dr. Thorn," he began. "That would take hours of work with the intricate mathematical concepts and involves formulæ that we have developed for these special problems.

"I'll try to state my view in broader and simpler terms. Dr. Thorn believes that he will be able to go down into the atom. And he believes he can increase his size, until he emerges into the hypothetical superuniverse above. Then he would be a giant indeed—each smallest cell of his body composed of a million flaming suns!

"Common sense rejects that, without recourse to mathematics. His body contains innumerable billions of the atoms into which he would voyage. In the other case, in his superuniverse, all our Galaxy would be to him invisibly small.

"In the one case, he is annihilating the matter—or, if you like, energy—that constitutes most of his body. In the other, he is creating the inconceivable mass, the unthinkable energy, of galaxy upon galaxy of suns.

"Either case, to me, is self-evident contradiction of two basic principles of physics: the laws of the conservation of energy and of mass."

That made a little uncertain stir. Many eyes went to Thorn, inquiringly. The elder scientist was looking patiently at Starbuck, who continued smoothly.

"Science, of course, often disproves common sense. Scientifically, this problem is less simple than it seems. I have examined Thorn's mathematical work very carefully—and I am compelled to admit that I see no flaw in it. This apparent defiance of the laws of conservation is covered by the effect that he refers to as expansion or compression in time.

"I can find no flaw in his mathematics. However, on the grounds of my own unpublished research, I must question his whole system of mathematics. According to my results, this project is impossible. Even with the tremendous power from this new converter, I don't think Thorn will be able to reach a normal size in any universe outside our own."

The eyes were back on Starbuck. He was smiling again, gravely.

"Understand, I'm not belittling Thorn's work. The new converter, by itself, would be the greatest achievement of history. He has earned immortality a dozen times. I can almost hope for him to do the impossible—but I know this is impossible.

"Neither am I suggesting that you give up the experiment. If we exhaust our power, of course, in the attempt to reach another universe, we shall be unable to return. I do not know how we may perish—but obviously it will not be upon the Earth.

"But this is the grandest adventure ever opened to men. We shall realize, in part at least, the most magnificent dream ever dreamed. We shall see our world, our universe, as men in all time have never seen it.

"Death, for that, is a very cheap price."

And he came quietly back through the scarlet lilies.

III.

THORN BROKE the tense little silence, asking:

"Once more, are you all willing to go ahead?"

Starbuck's quiet "yes" fell alone, but it gathered up a growing affirmation that became unanimous.

"Then we're ready to embark." Thorn's wide face shone with eagerness. "To leave the earth! If we do not fail, we shall increase our bodily size, until, as Will just put it, each cell of our bodies is composed of a million flaming suns."

Morrison Cross was hammering the ground again with his heavy cane.

"Damned interesting, this talk," he said. "But just talk! How are we going?"

Thorn, at last, moved to open the little metal case.

"That thing?" barked Cross. "Is that little gadget all you've got to show for thirty million dollars?"

Quietly, Thorn looked up.

"This is a good deal," he remarked. "The metal in my hands weighed several thousand tons when it was delivered to the laboratory."

He snapped open the case.

Rodney Trent was in the first circle of those who ringed the scientist. The case, he saw, was lined heavily with something like black velvet. In it were two little shining objects. One was a gleaming, nickel-white sphere, two inches through, studded with a few little glittering projections.

The other object, also of mirror-white metal, was a cube. It was about two inches on an edge. Attached to four edges of it were quarter-inch rods,

projecting a little above and below the cube.

Before Rod had an opportunity to observe anything else, Dr. Thorn carried the cube out across the grass. He placed it carefully on the ground, so that the four rods were upright, like posts, supporting the cube between them.

"I built this machine," he told his breathless watchers, "in the course of our preliminary experiments. It has been used for certain trial voyages, both in space and in size. We could never go very far, however, for lack of power—it is driven by Morrie's old one-stage converters.

"It will be convenient, now, to carry us to the new ship—we call her the *Infiniteria*—which is powered with the four-stage uranium converter."

Very carefully, he moved some little instrument on the upper face of the shining cube.

Immediately, visibly, it began to expand.

Even though Rod had followed the preliminary discussions—had, in fact, a complete shorthand record of them in his coat pocket—the thing was at first incredible. And the hundred waiting passengers gasped and exclaimed with dazed wonder, as the little cube, hung between four silvery posts, steadily and silently increased its bulk.

It was six inches on an edge—a foot—two feet.

Rod, now, could see openings in its mirrorlike walls: round ports, three tiers of them. He saw an oval door. On the upper face was a little dome, transparent, with an instrument-crowded pit beneath it. Small wheels under the posts were rolling slowly across the grass as they grew, separating.

"I declare!" muttered old Morrison Cross. "I do declare." The gold-headed cane dropped out of his fingers. He whispered, "Wonderland!"

Little Weir was staring astigmatically

at the growing wonder, wailing under his breath:

"My spectacles—why must I leave them to-day?"

Ever and again the waiting people, awe-struck, stepped back from the mounting cube.

Rod's professional instinct came abruptly to life. He slipped out his compact miniature camera, took a dozen shots of Thorn and the successively larger cube.

Its polished bulk lifted above his head, glittering argent in the morning sun.

Will Starbuck was beside Ellen Cross—she was one who had given little ground before the increasing cube. She reached out a curious hand toward its brilliant surface. He gripped her shoulders in quick apprehension, snatched her back.

"Ellen! Don't touch it," he whispered, voiceless with alarm. When she was safely back beside him, he asked, "Right, Thorn?"

Thorn nodded, startled.

"Everybody keep back," he warned, hastily. "Partial exposure to the field—unpleasant results."

Ellen looked up at Starbuck, shivering a little.

"Thanks," she breathed.

He quietly put his arm around her body, and she relaxed a little against it.

THE CUBE was less than thirty feet high when it stopped growing. The three rows of ports, Rod supposed, meant three decks within. The metal posts, now two feet thick, held it four feet clear of the ground.

Thorn advanced to the oval door, inserted and turned a key beneath it. The door slid silently aside. Railed steps automatically unfolded, reaching down to the grass.

"We'll go aboard now," he said. And some air of uncertainty made him add:

"There is no reason for alarm about

our trip in this machine. It was built three years ago. It has been well tested, in its range. It has been larger than a skyscraper—and small as a cube of sugar. In space, it has been around the Moon.

"The new ship—the *Infiniterra*—however has not been tested as a whole, though every working part has been checked. There was too much danger that it would somehow be lost in space or time or size, the precious fuel wasted, and this opportunity lost to all of us.

"The full effect of great changes in size, then, has not yet been observed. There are several puzzles—especially in the time control. But we'll soon know the answers."

At his gesture the men in overalls came forward, laden with the baggage that had been piled in the laboratory. They filed past him, up the steps, through the oval door. The visitors followed. Thorn lingered behind, to take the little sphere out of its black cradle, and lay it in turn in the velvet grass, where it shone against the green like a large white egg.

Aquiver with excitement, Rod mounted the metal steps.

"The name, sir," inquired the white-jacketed keeper of the sliding door. Rod supplied it. The steward searched his list, shook his head. "Sorry, sir. You aren't down."

Rod had a moment's terrible fear that the adventure, at this last moment, was being torn away from him. The man barred the way, his polite mask inexorable.

"I'm the newspaperman," he said, in inspiration. "I'm here in the place of Garrick—he didn't come."

"Oh, beg pardon, sir. I hadn't been informed." He looked at the list. "Garrick is down. You will find accommodations very spacious on the *Infiniterra*, Mr. Trent. The crossing will be finished in half an hour."

Gasping with relief, Rod found him-

self admitted to a narrow hall, spaced with metal doors. He hesitated; his instinct took control again. He hurried along the hall, climbed the compact metal stair at the end, and, passing the middle deck, emerged upon the upper.

He found a metal door marked "conning pit," and contrived to be waiting in front of it when Thorn arrived.

"I'm Trent," he offered, "from the *Times*."

Thorn was about to pass him, unheeding. He grappled with emergency. A cigar?—no. Flattery?—worse. Thorn was intelligent. A question?—that was it. Scientists will always take time to explain their work.

"This machine, Dr. Thorn? It moves through space, doesn't it, as well as—size? What propels it?"

That stopped him; Rod glowed with satisfaction. The deep-set eyes, under Thorn's massive dark brows, swept him piercingly.

"Trent, you say? You're the journalist? Well, I've no time to explain now. But come on up into the pit. I'll tell you as we cross to the *Infiniterra*."

Rod was delighted.

Beyond the door, a short ladder lifted through a manhole into the conning pit. It was circular, nine feet across, sunk four feet in the top of the cube. A transparent dome arched it. Visible beyond the sun-glinting surface of the cube, were the gray laboratory buildings, the white fence in the distance, the marching steel towers.

Thorn bent over the numerous instruments set in the metal ledge that ringed the tiny pit. Rod heard the slightest vibratory humming. That was his only sensation. He was astonished, in a moment, to see the gray buildings mounting steadily above him, the white fence receding into remoteness.

Breathless, he asked: "We aren't already—shrinking? I didn't feel—anything!"

"The change of size is effected by a

field of force that surrounds us completely," Thorn told him. "If you didn't refer to some object outside the field, you couldn't be aware of the change at all. Size, you see, is relative."

"I see," said Rod, eagerly. "And you were going to explain what makes us move."

"That is done by a power field, also. I suppose, Mr. Trent, that you understand something of the close relation between matter, energy, and space? It might be said that they all, as well as time, are phenomena of the same medium."

"I understand," said Rod, hopefully untruthful.

"Good," said Thorn. "The whole ship, then, is enveloped in what might be termed a unidirectional gravitational field. It represents a special strain in the ether, a unique warping of space. It differs in two ways from the ordinary gravitational field. It is created, not by mass, but by our powerful field coils; and it is hemispherical, unbalanced.

"In effect, it makes possible the instant reaction of every atom in the field, against every other atom in the universe. In other words, it enables every particle of the ship, of our bodies, even, to push against the very structure of space itself.

"Thus we achieve two vital results. We escape, first, the ordinary physical limitations of acceleration. The *Infiniteria* is livable, comfortable, at any conceivable speed. We've even an artificial approximation of Earth gravity.

"Second, since the drive is instantaneous, the theoretical limit of our velocity is infinity itself.

"These considerations are important enough, in ordinary flight. In the expansion toward the superuniverse, they are vital. They cut us free of the chains of space and time. Follow that, Mr. Trent?"

"Yes," said Rod. A shrewd little
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twinkle, however, in Thorn's gray eyes compelled him to add hastily, "Anyhow—most if it."

Smiling a little, Thorn turned silently back to his instruments.

Rod noticed, then, that the light falling on them was changing to a ghastly red. He looked up through the transparent dome, and cried out in bewilderment.

THE WORLD outside had astoundingly changed. The sky was a dome of smoky scarlet, the sun a dull ruby disk. Strange red was everywhere. The cube stood in a forest of crimson-black spears that curved up colossally against the blood-hued sky.

Far off, veiled in the dusk of red distance, loomed an incredible mountain. Red-black, perpendicular, its cliffs soared upward, mile upon mile. And still it had vaguely the shape of the laboratory.

"Why—why, Dr. Thorn," he stammered, unwontedly speechless. "I don't understand."

"The cube, by our former standards, is now about a quarter of an inch high," Thorn said. "It's time, now, to take off for the *Infiniteria*."

"But, doctor, I—we—we seem just as big as ever."

"Of course. Size is relative. Our only standards are comparative. We must refer to something outside the field. For my own indicator, here, I use a platinum bar partially shielded from the field, so that it is affected a little bit less than the ship."

"Thanks," said Rod. "One thing more. Why is everything so red?"

"Another phenomenon of comparison, Mr. Trent. The light waves are far longer, comparatively. 'Visible light' is completely invisible to us, now. We see our surroundings with the highest bands of the 'ultra-violet,' and they seem almost infra-red.

Thorn touched the controls again.

Immediately, though Rod felt no sensation of acceleration or of motion, the dark-red gigantic blades of grass dropped away beneath them. The cube lifted above the weird, somber plain, soaring silently into the lurid scarlet dusk.

Close at hand, the mass of the cube cut off the view of the ground. But Rod saw, in the metal ledge, four periscope screens. Following Thorn's eyes, he peered into one of these scarlet ovals, and discovered the *Infiniterra*.

The two-inch globe of nickel-bright uranium was gigantic, now. It loomed vastly above the eldritch forest of red, Brodingnagian grass, blazing with an ominous scarlet fulgor.

The cube had soared above it, was dropping toward it. It seemed to expand disproportionately as they descended—until Rod sickened with the vertiginous sense of being plunged recklessly down toward a metal planet.

"Doctor!" he gasped, swaying back in horror from the screen. "We're falling."

"Another error of comparison, Mr. Trent," the big scientist corrected him, a twinkle under his shaggy brows. "We are reducing our size again. Consequently the *Infiniterra*, outside the field, appears to expand. The apparent expansion gives you a false sensation of swift motion toward it."

Rod forced himself to look back into the oval plate, where the uranium sphere was still swelling enormously, while the grotesquely forested plain widened about it. Again it made him giddy.

"How large——" he whispered. "How large will it get?"

"The *Infiniterra*, by our standards when we are on it, will be ten miles in diameter," said Thorn. "A planetoid of uranium." And he explained. "The efficiency of the machine, Mr. Trent, depends ultimately on the ratio between fuel and load. By reducing our size—

the load—we make the proportion of fuel correspondingly vast.

"Even so," he added, "it will be a close thing. By converting uranium—the heaviest element, number 92—into pure energy, we have the most perfect source of power theoretically possible. Nevertheless, we may face a shortage."

A certain apprehension was descending upon Rod. The strangeness of this adventure was undermining a confidence that had been superb.

"You think," he asked quickly, "that Starbuck might be right?"

"He may be," Thorn admitted. "My mathematics is correct—so far as it goes. So, I must admit, is Starbuck's." His keen eyes were soberly speculative. "Perhaps we're both wrong. We may be like the blind men and the elephant—both mistaking contradictory fragments of one truth for the whole.

"Anyhow, we shall see—soon."

Rod's keen anticipation of novel adventure was clouded again by the oppression of alien, unpredictable peril. Yet he could not wish that he had stayed behind. The veil of mystery was patterned with a dread fascination. Fear was overcome by that terrible urge to know.

A disturbing thing, once more, drew his attention without.

The lurid, ghastly light had been fading steadily. The enormous bulk of the *Infiniterra* was lost, now, in the portentous, blood-thick twilight. A sinister night was swiftly cloaking the forest of red-black grass, now unbelievably gigantic.

He looked upward through the dome. The sky had become completely black. The Sun remained visible a moment longer, like a cooling disk of metal, glowing with a feeble, mottled red. Then even the Sun was gone. The cube swung in utter darkness.

Sudden panic made Rod call out:

"Dr. Thorn! Why—this darkness?"

Thorn was a quiet, dark mass in the

faint glow from the curving ledge of instruments. He answered calmly:

"We have passed beyond the ultra-violet. The shortest radiation of the Sun is now too long to register on our retinas, even as red."

"Then how can we find the ship?"

Rod knew, for a moment, the despair of being lost in a universe of darkness.

"We shall see it by the cosmic ray."

"See?" Rod was astonished. "See the cosmic ray?"

"Look."

Again Rod looked through the dome. A flush of faintest violet had come into the sky. The Sun was not its source—was, instead, a black disk against it. This strange radiance increased until it was a pure steady glow, pouring softly from all the heavens.

He peered again into the periscope screen. In this new, shadowless light, the *Infiniterra* was once more visible beneath them, bulking Titanic. The gigantic grass about it, even the ground under it, was semitransparent, ghostly unreal.

"Why——" Rod began a question, and then answered it himself. "The ground is partly transparent to the cosmic ray."

"Exactly, Mr. Trent," boomed Thorn, with a twinkle of approval.

The Cyclopean purple-lit globe floated up toward him. The edges of it became a curving horizon, beneath the violet glow of the sky. Rod distinguished a tiny, domed metal tower, a little square pit yawning blackly near it.

He was abruptly aware of a shining wall under them, a transparent shell that seemed to enclose the *Infiniterra* like a bubble. The cube broke through it. In a moment, before he could realize it, they had landed without a jolt, beside the tower, on a smooth, glistening surface of white metal.

"So we're on the *Infiniterra*?"

"The ship of infinity!" exclaimed the

big scientist, his voice trembling with a soft eagerness. "Now our flight begins, in earnest."

IV.

DURING THE CROSSING to the *Infiniterra*, Will Starbuck had been with Ellen Cross. Together with Madeline Thorn, Morrison Cross, and Cross's English secretary, Cyril Culpepper, they were crowded into one of the tiny staterooms on the cube.

Morrison Cross stood at the small round port, gazing out through the heavy bull's-eye of laminated quartz. His lean, talonlike fingers closed hard on the coiled gold snake that formed the head of his cane.

"I declare," he muttered at intervals. "Wonderland."

They sat together on a little sofa against the wall, and Starbuck said:

"Ellen, I'm glad you came."

Her blue eyes smiled up at him. Softly she asked, "Why?"

"Perhaps I shouldn't be glad," he said, not answering directly. "Because I'm certain we shall never come back. I should be sorry, I suppose, to see you snatched out of your life. You seemed happy."

The wide oval face framed in the waves of her red-gold hair became slowly grave.

"I thought I was happy," she said. "I should have been, Heaven knows. Dad's hard, to the world. But dad has his soft side—toward me.

"I had everything I wanted, that money would buy—and enough of it will buy almost anything.

"I had friends, of course—but who wouldn't have been friendly? I was never sure, I suppose, whether the attraction was myself—or money.

"Anyhow, Will," she said softly, "I'm not sorry that I came. But what do you think will finally happen to us?"

"I don't know. Uncertainty is the

spice of it. The rest of our lives, I think, we shall be far from the Earth—far in space, in time, and in size. Somehow, sometime, we must die.

"Peacefully, it might be, on the *Infiniterra*. The ship is like a little world, you know. We could live our lives out, there. Or it may be that we shall die suddenly and terribly, destroyed by some agency we shall never understand."

"Still," she whispered, "I'm glad I came."

He felt the little pressure of her knee against his, and dropped his hand upon it. She didn't draw away.

He looked down at her, and his voice was low.

"Then I'm going to tell you, Ellen. A long time—I've wanted you. Since that day at Thorn's, I suppose, when I first saw you."

Her grave blue eyes widened a little.

"I have liked you, Will, since that day. But you always seemed somehow—distant."

"I felt that you were the distant one, Ellen. You were shut off by your money, walled in with luxury. I was a church mouse—sometimes existing on a grant or scholarship, sometimes just—existing."

He laughed at himself, bitterly.

"I've lived on one meal a day. And worn soiled linen, often enough, because I couldn't afford the laundry."

Her grave eyes were dark with regret.

"I wish you'd told me, Will—then," she said. She moved his hand, drew back from him a little. "We could have found a way—then."

Smiling gently, he reached out and took her hand.

V.

RODNEY TRENT walked with Jarvis Thorn down the narrow, compact stair within the cube, and came out

upon the cold, brilliant metal of the *Infiniterra*.

He was bewildered again, to step into the soft, purple-gray radiance that glowed from the whole sky. The polished nickel-white of the *Infiniterra's* surface shimmered under it, like a bubble of flame.

The ship seemed indeed a small planet. Its refulgent horizon curved down visibly. But the metal plain, broken only by the one cylindrical tower beside them, appeared deceptively and desolately vast.

"For the time being," Thorn announced, "we'll leave the cube here. The central sphere is five miles under our feet, in the center of the ship. Our living quarters are there, together with the main controls and the field generators. There's a shaft, yonder, through which to take the cube down.

"But our passengers will no doubt wish to watch the taking off."

A little group had already left the cube, in charge of one of Thorn's assistant engineers. He was gesturing into the purple haze. Rod caught a fragment of his talk:

"—this purple light, ladies and gentlemen, you actually are seeing the cosmic or Milliken radiation, the extremely short, penetrating waves that continually beat upon the Earth from all space—"

As they went on, a question struck Rod, out of his small science.

"How is it," he inquired, "that we can breathe here? The air must be changed?"

"Exactly, Mr. Trent. A good question," said Thorn, approvingly. "Small as we are, we couldn't breathe a molecule of ordinary oxygen. It would be more apt to knock us down."

"How, then?"

"You may have noticed, as we landed, that we slipped through a film, a kind of bubble, around the *Infiniterra*."

"Yes."

"That was an energy screen, a wall of pure vibratory force, fed from the generators below. It was weakened, automatically, to let us pass. Ordinarily, it would repel a million-ton meteor. It easily holds in our synthetic atmosphere, and protects us also from loss of heat or from inimical radiations."

Striding in step across the metal plain, they had come to the circular tower, which was itself of silverlike uranium. A hundred feet in diameter and twice that high, it was crowned with a shimmering dome. Its walls, Rod noticed, did not rest on the uranium plain. The whole tower seemed to project out of a circular hole.

Thorn, fitting in a key beside a sliding door, felt his unspoken question, and explained:

"There are six of these towers. They project at right angles from the surface of the central sphere five miles below. They are built of telescoping sections, so that they can rise above the surface of the uranium, and be shortened as the uranium is used up.

"All this mass of metal is fuel. In the dome of each tower is installed one of the new four-stage converters. It projects what I may term a beam electrode. Heterodyning frequencies set up the first stage of atomic conversion; the products are carried up to the converter tubes."

"All this metal will be used up?" Rod asked in wonderment. "Cubic miles of it?"

"All of it," Thorn assured him. "In fact, these towers are built of uranium, so they can be used. So is every possible bit of apparatus—even the containers for our food, and the dishes off which we shall eat. We may need every atom of it."

"Come on, Mr. Trent," Thorn invited, "up to the control room."

"Thanks," said Rod, stepping after him with alacrity. "It's very good of

you, Dr. Thorn, to give me so much time."

"Not at all," said Thorn, though his eyes shone genially. "I asked you aboard to record a narrative of the experiment. You can't do it, obviously, unless you understand what's going on."

"Still, kind of you," insisted Rod. "You could have dumped me on one of your men."

"All right, you win." Thorn laughed, deeply. "I have to admit that I enjoy talking to you. I suppose I'm lonely, Mr. Trent. I haven't had much time, in the last ten years, to devote to garrulity."

Rod, on impulse, offered him one of the dollar cigars—it seemed a long way to the reckoning of his expense account. Thorn lit it appreciatively, after he had punched a button in the tiny uranium anteroom within the sliding door.

"An elevator?"

"Yes. The shaft runs all the way down to the central shell. The telescoping tubes of the tower also contain the power conduits from the converters, telephone and teleperiscope wires, and control cables."

They entered the elevator, stepped out upon the hundred-foot floor beneath the lofty metal dome. Within that vast space bulked a gigantic mechanism. Heavy gimbals carried the massive barrel of it. Thick power cables coiled from it, like immense black snakes. To Rod it suggested a very thick telescope, with a lot of added gadgets.

Thorn jerked his big head up toward it.

"The converter," he said.

They mounted a spiral stair that clung against the dome, winding above the converter. At the crown of the dome, seventy feet above the floor, they climbed through a manhole, and came into a conning pit. It was not much different from that on the cube, though

slightly larger and fitted with more bewilderingly intricate mechanisms.

The curving metal horizon, from this elevation, dropped from the purple sky with astonishing abruptness. Leaning close against the dome, Rod could see the cube, dwarfed beneath them, see the ant-sized forms of its passengers grouped about its door.

Thorn put deft fingers to the crowded instruments.

Watching through the transparent dome, Rod saw the metal roof of the tower open below him, like an observatory dome. The massive, silvery barrel of the converter frowned out. A pale greenish beam flashed from it, to the white plain below. The uranium, where it struck, glowed silver-green.

"The beam electrode," said Thorn, abstractedly. "It disrupts the atoms. Alpha particles, beta rays, and proton streams are swept up the beam, to the secondary conversion tubes. They deliver pure energy to the transformer tubes, to be stepped down to manageable voltages."

Rod was aware, before the scientist had done speaking, that the purple sky was fading. It became faint violet, and then was swallowed into utter darkness.

The green ray, spurting out into overwhelming darkness, shone with a dazzling and painful intensity. Beneath it the uranium burned with a virescent incandescence. A dry hissing sound issued up from the ray.

Rod asked: "We've started?"

"Yes, we're off," Thorn said. The end of the fragrant cigar was a pulsating red orb, above the pale light from the instruments. Thorn's voice rang deep with eager enthusiasm. "We're flying up through size. Yet we are microscopically small. When we stop—if we do not fail—our whole Galaxy, our Sun and all the suns out to the Milky Way, will be less to us than the point of a pin."

Somberly, wondering doubt shadowed the deep voice, as he repeated:

"If we do not fail."

VI.

WHEN THE CUBE had landed on the *Infiniterra*, and the others were leaving the little cabin, Madeline Thorn touched tall reedy Culpepper's angular arm. A nod of her dark smooth head bade him stay behind with her.

His face bright with eager anticipation, he closed the door after the others. His was a bony face, with a thin, jutting nose, prominent chin, high cheeks. Under colorless brows, his eyes were long greenish-yellow. An avid flame was in them, now.

"Madeline, darling," his throaty Oxford voice said swiftly. "It's days since we've—"

His thin hands were taking possession of her long pliant body.

She stepped away from him. A troubled purpose accentuated her somber beauty, shadowed her dark eyes.

"No, Cyril," she said, in a small resolute voice, "I didn't stay for that. There's something I must tell you."

"What is it, my dear?" he asked, his tone faintly colored with displeasure.

"At the house," she said slowly, "just before we started, my husband talked to me."

"I see." Swift anger flooded the yellowish eyes, though his voice reflected little of it. "So Thorn has found us out?"

She nodded.

"And he's dragged us into this trap!" The anger was growing into his words. He cut off her protesting voice. "Yes, it is a trap! Thorn's master here; the men will all do what he says, and there's no law to stop him. He knows he can average himself as he likes."

"But, Cyril—"

He ignored her. A cold, desperate fury had tensed his loose-jointed body.

"Thorn thinks he can," the man snapped. "He thinks he's a little god, with all the power of his science. He is trying to make a god out of himself. A billion times the size of the Earth! But he shan't pass judgment on me."

"You're unjust, Cyril," cried Madeline, hurt. "Wait——"

His thin hands knotted with fury.

"He'll be a dead god, next thing he knows. I've a pistol in my bag. In spite of all his power and all his cringing men, I'll find him and shoot him down——"

With her two hands Madeline seized his narrow, angular shoulders. She shook him.

"You'll do nothing of the kind," she said. "Jarvis is the kindest, most generous man I ever knew. You shan't touch him. You're a fool, Cyril. Listen to me."

"I won't have Thorn sitting in judgment on me, like a little tin god——"

She shook him again, like a spoiled child.

"Keep still, Cyril. You're acting like a five-year-old. My husband isn't doing anything of the kind. Just wait until you've heard what he told me."

He waited, unwillingly. "Well, dear?"

"An hour before we started, Jarvis came in my room. I saw that he was troubled, that he had something on his mind besides the experiment—though that has been enough to wear him out. He made me sit down beside him on the divan.

"'Madeline,' he began, in his quiet, steady way, 'it has been seven years since we were married. I'm afraid that I haven't been a good husband. My work, most of the time, has been—or seemed—more important than anything else. I haven't given you very much.'"

"'That's true, Jarvis,' I had to tell him. 'You've always been generous with money. But I've had such a terrible need for more than that.'"

"'I know—now,' he said in the same quiet voice—it was even, perfectly controlled, and yet it had a hidden pain in it that made me want to cry. 'If you had been interested in scientific work—or if I had taken time to go into your world—but it's rather late to say that.'"

"He stopped, then, and looked at me a little while. When he spoke again, it was to tell more about this trip. He had already told me that I might come, if I wished. He had told me that Ellen was coming, and my father, and you.

"'I don't know when we shall come back,' he told me. 'It may be years. Or we may never return. Will Starbuck thinks that we shall all perish, out in the unexplored wilderness of space and time and size. Will has a good chance of being right.'"

Still with her hands on Culpepper's lean shoulders, she looked gravely into his flushed face.

"Then Jarvis told me, Cyril, that he knew about us."

"How did he find out?" demanded the thin man, wrathfully. "Has Thorn been spying on us?"

"Be quiet, Cyril," Madeline commanded, in her low gray tone. "I don't know. I didn't ask him how he learned. It doesn't matter. But he told me that he knew, and then he said:

"'I don't blame you, Madeline. If there is any fault, it is more mine than yours. And if you have found any happiness, I am glad.'"

"He just sat there for a while, with a kind of sad weariness on his face, that made me dreadfully sorry for him. Then he went on, 'I've known for some time. I'm telling you now, Madeline, only because all of us who go on the *Infiniteria* are very likely to die there.'"

"'If you wish to stay,' he told me, 'I'll arrange for Culpepper to be left, also. You can, if you wish, easily get a divorce. There is, of course, the income from my patents. I see nothing

to stand in the way of your—happiness.”

“He told you that?” exclaimed Culpepper. “We could have stayed? Married? Had all the millions coming in from Thorn’s royalties?”

She nodded.

“Then why didn’t you tell me?” A futile wrath choked him for a moment. “Thorn offered us all that—and you threw it away! Why, Madeline, why?”

Her dark, shadowed eyes were staring at him.

“I don’t really know, Cyril,” she replied slowly. “I haven’t ever taken any part in his experiments before. I’ve let him go into danger, many times, without feeling any duty to share it.

“Half the men were killed, you know, when they were first working on the atom. Jarvis was sick for years with the terrible sores the radiation caused—and twice explosions almost killed him.”

Her dark eyes closed for a moment. Upon the oval of her smooth face, framed in her smooth dark hair, descended a curious serenity.

“Somehow, Cyril,” she went on, “this is—different. I wanted to come with Jarvis—even if we died. Somehow I knew that you and I couldn’t be happy, behind.”

VII.

UNDER THE SMALL, laminated quartz dome of the conning pit, atop the vast uranium dome of the converter tower, stood Rodney Trent, alert with expectation. The only light within came from the faintly glowing instruments and the red end of Thorn’s cigar. Without, still lay the oppression of darkness.

On the uranium plain the blinding green tongue of the converter beam still licked a patch of dazzling incandescence. Beyond that, above, in every direction, closed in the black mists of infinity, mysteriously dreadful.

Time, to Rod, became an intolerable burden. He was conscious of the drum and rush of his blood. Then that gave way to the waxing tick of his watch. And that, in turn, waned before the keen, thin hissing of the green ray, and the very faint humming that came from all the mass of metal below him.

“Sure?” Suspense drove him to the query. “Sure we’re moving anywhere?”

The red tip of the cigar moved up and down with his nod of affirmation.

“Yes,” Thorn said. “We’re coming up through size, and flying out away from the Earth, at the same time, into the freedom of space. We’re moving slowly, yet the fields are still building, and I’m testing the instruments. The *Infiniteria* was untried, you know. But we shall be outside the Galaxy before you sleep, Mr. Trent.”

Rod pondered for a time upon that calm prediction, groping for the stupendous reality that he sensed behind it. He wished that he had read more of astronomy, of science generally. If he had known that this was coming—

Then he became absorbed again in his effort to penetrate that ultimate, smothering darkness.

“The Sun!” he cried at last. “I see the Sun.”

A mottled scarlet sphere, it slid out of black obscurity. Its red light, waxing, flooded the heavens once more with ghastly radiance. Overhead, however, the red immediately began to fade. Crimson constellations burst out there, though the horizon remained fogged with blood-red haze.

“Stars!” Rod whispered. “Red stars, coming out in daylight.”

“We’re rising into the stratosphere,” Thorn told him. “The air above us has thinned so that stars are visible, in spite of the Sunlight. And we are yet so small that the ultra-violet registers as red. If we had expanded the *Infiniteria* too much, in the Earth’s atmos-

phere, we might have left destruction behind us."

Rod looked down, into the periscope screens. But the little ovals, he found, were veiled with the same red haze that obscured the horizon. Laboratory, bright summer countryside, city, were already lost.

Steadily, above, the star fields widened. The ominous redness evaporated, leaving a void of unimagined blackness, in which the stars burned with a white or many colored splendor that Rod had never seen. The Sun was a blinding face of wonder, looking between the parted flame-curtains of the corona.

Where the Sun struck it, the *Infiniterra's* shell flamed with a startling white radiance. Elsewhere it was a ghostly sphere of starlight.

"I'll turn the ship a little," Thorn said, "so that the Earth will be visible through the dome."

The winged Sun declined in the black sky. Opposite, above the straight metal horizon, a clouded, greenish sphere rose lazily. Rod was astonished that the Earth could already be so small, so far distant. Yet this, he knew, was indeed the Earth. He could trace out the familiar outlines of both Americas, tiny and brownish, under the shimmering white crown of the polar region.

In the dark gulf below, a little disk of hard white light swung into view. It was stained and scarred. It was like a small, flawed diamond on black velvet. The Moon—already shrunken to half its proper size.

Moon and Earth dwindled visibly. They drew together in the darkness, and away from him. He was appalled by a sudden realization of the hurtling swiftness of the flight.

"Already," he gasped, "we've come thousands of miles."

"Hundreds of thousands," amended Thorn. "And that is not a fraction of the distance we must go."

Rod hardly heard, for he was watch-

ing the Earth. His pulse was hammering in panic of bewilderment. At first he doubted his eyes, but there it was again—

The brown, tiny figure of the two Americas, sharply etched, slipped quickly across the soft, blue-green sphere. The long prow of Asia burst into view, beneath the rotating polar crown. Australia hung below it, a little gray blot. They fled away, before Europe and the dark triangle of Africa.

And then, swiftly, the twisted hourglass of the Americas returned.

Still watching, Rod drew a long breath.

It happened again. The dwindling sphere spun faster. The white shred of the Moon crept up beside it, thinning to a diminutive crescent.

"The Earth!" he called to Thorn, vaguely alarmed. "It's turning while I watch it. And each turn—a day?"

"It is, Trent. It is." The deep voice held a trace of consternation. "An effect of what I called, back there, a compression in time. I hadn't realized that it would be so great."

"We're very large, already?"

"The *Infiniterra* is roughly the size of the Earth, now, Trent. You, by your old standard of comparison, would be about one mile tall."

Rod flexed his arm; it felt the same as ever. He looked down at the dull gleam of his shoe. He couldn't imagine that distance a mile. But of course he couldn't tell. Size, Thorn had said, was relative.

THEN, in the harsh, glancing light of the naked Sun, he saw that Thorn was still staring at the Earth. Dismay lined his face; it was heavy with regret.

"Why, doctor!" cried Rod, anxiously. Thorn's assured competence had been his armor against the terror of these breath-taking marvels. If Thorn was disturbed— Horror touched him, with the thought. "Doctor, what is it?"

"Look at the Earth," whispered Thorn.

The greenish planet was now a tiny thing, and blurred with the swiftness of its spinning, so that the only distinguishable feature was the white fleck of the polar crown. The Moon was as small as the morning star. It swept around the greenish ball, once, twice, again.

Faster it moved, ever faster, hurtling.

The Earth shrank to a green star. It swung away, beyond the blue-white face of the Sun, and came back again.

"I hadn't realized," moaned Thorn. "For myself, I was prepared. And my men were warned—but many had families—"

"I don't see—" said Rod. "What's the matter?"

He still watched the green star. As fast as the tiny Moon, now lost, had circled it, it was swinging around the Sun. And faster, faster.

He was aware of other bright motes, also flinging aimlessly about the white ball of the Sun. The planets, he thought. The tiny, darting one would be Mercury; the swift, silver-blue one, Venus. The deliberate ones, outside the green Earth, would be red Mars, white Jupiter, tawny Saturn.

Faster they wheeled, ever faster, like maddened insects drawn to a flame. And even the flame, the Sun, was shrinking, slipping away.

"I don't mind for myself," the scientist was muttering blankly. "Many of us will have no personal regrets. But many had hoped to return, or had some one waiting."

"Oh," breathed Rod, staggered under the slow realization. "We can't go back?"

"Not to our world," Thorn informed him, bleakly. "It's gone. We've watched a thousand years slip away, Trent. Our world is—dead."

Rod battled with that finality.

"We can't—not at all?"

"We could find the Earth again—and find that the ages had wiped out everything we knew. Even the human race, perhaps—dead."

"But," persisted Rod, "when we grow small, you said, we are compressed in time. Wouldn't we go back through it?"

"No, Trent. Time is irreversible. Even if we turned now, ten thousand years would have gone before we could reach the Earth. It is merely that time passes more slowly, comparatively, when we are smaller in size. Some one has speculated that electronic worlds might be born, age, and die, in the flash of exploding gunpowder.

"No, time flows in the same direction, always. Our world is behind us, forever. And we are dropping centuries farther behind, with every beat of our hearts."

Rod was silent, struggling to understand the meaning of that. He wouldn't be going to the office any more. He'd never turn his copy in to old McGregor again, never have another battle over his expense account. He'd never speak to one of his friends again, or stroll into the corner joint for a beer. He wouldn't see his old room any more.

That made him remember that his rent was due to-day—no, it was ten thousand years ago. It was Mr. Connors' birthday, and Mrs. Connors had been waiting for the money, to buy the old fellow a microscope he had set his heart on. Rod was sorry he hadn't paid the rent, before he left the house since—

New realization, then, came over him like a crushing wave, drenching him with loneliness of desolation. His head sank against his palm; he felt an unexpected wetness on his cheek.

The past was gone.

What lay ahead? Thorn didn't know. Nobody did. Well, he'd see it through. Don't take life too seriously.



*"Infinity," the scientist said.
"We're driving out into infinity
—in space, in time, in size."*

Anyhow, he'd see new things before he died. He threw up his head.

Beyond the dome, his dulled attention was immediately claimed by new changes in the firmament. He could no longer find the Sun. The constellations were warped and twisted. They were, he saw, still changing. Distorted star patterns flowed, crept eerily across the infinite black mask of space.

Color was changing again. The stars were violet, and fading.

He spoke to Thorn. The scientist

started, jarred out of some grim pre-occupation of his own.

"Violet!" he exclaimed, and then said calmly, "Yes, so they are. That is because their longest radiation registers within our eyes as violet, the shortest visible wave length. When we are a little larger, the stars will be invisible. Their longest waves will be too short for us to see."

"We must have come a long way," said Rod.

He was striving for some conception

of their hurtling flight toward infinity. When he could feel no change, no motion, it was hard to perceive the reality of it.

"We have," Thorn said, "to express it from an older point of view, been traveling fifty thousand years, at the limiting velocity of light."

He pointed deliberately through the dome.

"See, the stars are already crowding together into a lenticular spiral. We shall soon be outside the Galaxy."

Rod looked. Most of the stars, he saw, and the faint patches of nebular light, were indeed gathering into a vague, violet cloud on one side of them. Ahead was the black gulf, broken only by the inconsequential gleams of farther nebulae. The light of that dwindling star-swarm was becoming very dim. It would soon be gone.

It was hard to believe that the Earth was but a lost mote, somewhere in that dying swirl of light. The Earth, where Mrs. Connors had served him breakfast that morning, and he had inquired about the old gentleman's asthma. Well, maybe it wasn't. Perhaps, in fifty thousand years, it had already plunged into the Sun, or been battered into cosmic dust.

The pale glow went out.

Again the dome was in darkness. Outside, the only light was the green, hissing flame of the converter beam. He looked down into its dazzling radiance. Already, he saw, it had eaten deep into the uranium. It struck into a ragged, pitted crater of green flame.

Countless tons of metal had been consumed, to drive them out of the Galaxy.

What next?

The mass of uranium, after all, was no more than touched. There would be power yet, to go a long way. He put the question to Thorn.

"Infinity," the big scientist told him,

his deep voice vibrant, once more, with a strange fascination. "We're driving out into infinity—in space and in time and in size."

"But what will infinity be?"

"We've come to find out. It is the oldest riddle. From the beginning, man has struggled with it. Every child, every savage, asks: *What's beyond beyond?* No philosopher has ever answered the question.

"But we may see the answer—if the power holds out."

"The uranium?" said Rod. "We haven't touched it."

"And we've merely begun the flight. I think we can reach infinity—whatever it may be. Will Starbuck says we can't. We shall see. There will be no returning. We can only go on until we—"

VIII.

"HERE! Jarvis?"

"Eh?" Thorn started at the shout through the manhole. "Oh, so it's you, Morrie? Climb up. We're a little crowded in here—careful about the instruments."

Old Morrison Cross clambered up into the dim little space under the dome. One yellowed hand clutched the snake-headed cane. He was a tall man, long-bodied; in spite of the paunch he looked gaunt. His ungraceful limbs were trembling now; his long face was haggard with a sickness of frightened rage.

"What's this, Jarvis?" he yelped. "What's happened to us?"

"We're flying out to infinity, Morrie," Thorn told him calmly. "Already we are outside the Galaxy."

"Listen, Jarvis!" The high voice tried to be harsh, but it was smothered under angry fear. "Don't think you're pulling any wool over my eyes. I've been talking to Starbuck, and he gave you away. I got the truth out of him."

He seesawed, grasping the cane with two hands.

"You're responsible for this, Jarvis."

"For that?"

"You know what's happened!" Terror choked him to a whisper. "Don't lie to me. You saw the Earth flying around the Sun like a rock on a string. You know that ages have passed."

"Yes, I know."

"Take me back, Jarvis." His old voice quivered with pleading. "You did this. You've got to take me back."

"I'm sorry, Morrie. You might as well beg for Helen of Troy. The past is gone."

"You can't do this to me!" And a terrible accusation shook his voice. "You admit we can't go back?"

"We can't. I warned you, Morrie. And you heard Starbuck."

"Damn you, Jarvis!" His long, bony forefinger shook threateningly. "I had confidence in you. And who was Starbuck, but a young whippersnapper upstart? I didn't want to miss a show that was costing me thirty millions."

"Well," Thorn told him genially, "you haven't missed it yet, Morrie—it's still going on." He looked at a dial. "Less than half of one per cent of the uranium is gone. We've fuel for a long time yet."

He stopped to look at the old man in the dark.

"What do you care, Morrie? What good were you doing anybody? Who'll be sorry you're gone? Some of my men, though, have families; I had hoped to get them back."

"So we're all to die on this damned ball of metal?" Cross asked bitterly. "When?"

"I can't say when or where or how. We're flying into mystery, Morrie."

On the instrument ledge a telephone buzzed softly. Thorn answered it, and then said:

"Mr. Young is going to move the cube, now, down into the central sphere. Morrie, if you and Trent will go back aboard, you'll be carried down to your quarters."

He anticipated Rod's question.

"There's nothing to be seen now, Trent. We're beyond the radiation of our universe. When we see again—or if we see again—it will be with the light of the universe above. I'll send for you before that happens."

Rod followed Morrison Cross down the long spiral of the metal stair, past the forbidding bright bulk of the converter. A low throbbing sound came from it, oddly musical. The green ray flaming from the barrel filled the dome with ghastly light, and its hissing was unending.

Cadaverously gaunt in the green light, Morrison Cross stumbled down the steps, with both hands on his stomach as if in pain.

A hand rapped softly, an hour later, against the metal floor of the conning pit. Thorn opened the sliding panel, invited, "Come up." He took a pipe out of his mouth, and looked down out of the pale glow in the dome.

A platinum head rose through the opening, followed by a trim form in well tailored gray. A serious face looked up eagerly. Steady, blue-gray eyes smiled under even brows.

"Melanie!" he exclaimed, in sudden apprehension. "You stayed off the cube? I didn't know. I've been shifting the beam; it might have caught you——"

He reached down and helped her to climb to the small circular floor, beside him. Her fingers clung to his, with a warm, impulsive little pressure. She swung to her feet, almost against him. Her body was slender, yet energetic with a precious vital strength. His nostrils caught the fragrance of her, and for a moment he closed his eyes.

"I had to see you, Jarvis," she said. With a little unsteady laugh of relief, she gave him a thick envelope from her purse. "Here's the transcript of your last dictation. My excuse to come."

He took it silently, waiting for her to speak.

"They're saying, Jarvis, that we can never return to the old world." Her voice was low and anxious. "Is that true?"

He studied her grave, tense face.

"Yes, Melanie. We can't go back. Are you afraid?"

"No." She shook her head, smiling briefly. "You had warned me. I was ready for that. I'd be glad—but for one thing."

"What's that, Melanie?"

She hesitated, and then, with an abrupt little jerk of her head, asked another question:

"Did you tell Mrs. Thorn what I had found out about her affair with Culpepper?"

Thorn dwelt upon her slender loveliness, and replied deliberately:

"I didn't tell you, Melanie, but I had known that for a long time. Yes, I told Madeline what I knew, just before we started."

"And she came, anyhow. Does she"—the girl flinched from a little stab of pain—"does she love you, still?"

In breathless anxiety, she waited.

Thorn was still looking at her; a slow light came over his heavy face.

"I believe, Melanie, that she does. Strange, perhaps, when we had grown so far apart. But I think she does. But tell me, Melanie, what does this mean to you?"

Reluctantly she moved a little away from him. She stood leaning against the instrument ledge, her two hands gripping it.

"No," she whispered. "No, I mustn't."

Thorn waited, smiling grave encouragement; suddenly she yielded.

"I had hoped, Jarvis, that she wouldn't come. I wanted us to fly away like this, and be always—together." She looked at him with burning eyes, but he did not move or speak, and in a moment she went on:

"I guess—I guess I've always loved you, Jarvis, since the day I came. It always gave me a kind of fierce joy to be in the laboratory with you, and help with your work. When you had those awful burns from the rays, it used to hurt me till I cried. And I used to have the most terrible hate for your wife, for taking your money and all the luxury you gave her, and then never coming near you, while you worked day and night in danger of your life."

She stopped with a curious little laugh, that could not disguise a sob.

"I didn't know," Thorn said slowly. "Melanie, I didn't know. I have liked and admired you, of course. I appreciated your loyalty, and knew that you were working too hard for the good of your health. But you were so much younger; I was so lost in my work——"

"Well, that's better," she said, with a forced briskness in her voice. "I'm just a silly little idiot."

"No. You're a woman, and beautiful."

A new, eager life was in his voice. He reached out to touch her shoulder, with a half-awkward manner of instinctive admiration.

She shrugged away from him.

"No, Jarvis." Her voice was level with decision. "I shouldn't have told you, and we shall go on as if I hadn't. If Madeline hadn't come—if we had left the Earth, and her, forever—things would be different. But I've never wanted any cheap, hidden affair."

She took his hand, still outstretched toward her, and squeezed it a moment

before she let it go. She found a compact and dabbed at her complexion.

"Is there any dictation, Mr. Thorn?"

A gay little laugh covered her tears. Thorn gulped and came to himself, suddenly.

"Well, we might start the journal of the expedition. Begin: 'Aboard the *Infiniteria*——'"

Over them arched the small, quartz dome. Darkness weighed upon it. Outside, the green, hissing beam burned into the little world of metal. Above and ahead yawned black infinity.

IX.

THE CUBE dropped into a square pit, and the black sky was whipped away. Rodney Trent, on the cube, looking through a port, watched the smooth, dimly-lit walls of uranium slide upward.

The cube came to rest on a platform within the strangest space he had ever visited. It was a hollow sphere, and enormous—at least six hundred feet in diameter. An almost inaudible humming vibration betrayed the tremendous energies prisoned within it. It was packed with Titanic mechanism, all of nickel-brilliant uranium, and bathed in white, shadowless light.

A confusing web of ladders, stairs, and railed cat-walks extended everywhere. Rod noticed, from their arrangement and the positions of the few men upon them, a queer thing. *Down* was invariably toward a monstrous disk-shaped affair that shimmered strangely in the center of the sphere.

The few men he saw were dwarfed by those engines of enigma; they were insects merely, utterly insignificant. And the looming bright masses of metal were overwhelming, spiritually; they depressed Rod. It meant nothing to recall that he had once seen Thorn lift all this in one hand.

Well, size was relative.

With the rest of the passengers, Rod

was guided along a railed walk to a rectangular mass of metal that proved to contain the living quarters. He sighed with relief, contemplating the appointments of his perfect room. His spirits rose as he tubbed himself luxuriously, and descended to an excellent meal served on a polished uranium plate.

At the long table he found himself placed between Ellen Cross and the tall, mannish girl he had heard called Martha Lee. Beyond them, respectively, were seated Will Starbuck and the thin student, Paul.

"It's odd," he told Ellen, "to realize that breakfast was a million years ago."

She looked at him, quickly sympathetic.

"Do you mind?"

"Not much," he said. "I left nothing in particular to think about. Funny, how few ties I did have. My rent was due, and the landlady was waiting for the money, to buy a microscope for her husband—he was an asthmatic old fellow, always pottering around with some scientific gadget. I wish I'd paid that. Funny, but I can't think of anything else——"

"Yes," she said, soberly. "It's queer that it should be so easy to come away. Life seemed fearfully important as we went along, day after day. I had always felt that to leave it would be unbearable tragedy. But this was easy as getting on a train."

Her blue eyes made a quick journey back to Will Starbuck.

"I'm glad," she said, "that we aren't going back."

The girl Martha Lee, a little later, replied to a query of Rod's with those same words of sober relief.

"Why?" Rod inquired.

She looked quickly at the slender, stooped young man, Paul.

"Well, life didn't mean anything to us." She read the sympathy in Rod's face, and went on impulsively. "It's

shocking to say it—but Paul and I had planned not to go on living. We were very unhappy. But this has lifted us out of all that misery.”

A strange look of awe transfixed her face.

“We were lifted out of that petty unhappiness. We have come into the divine calm of infinity.” Her deep voice trembled with an eager, reverent joy. “Still living, we may see God.”

X.

SOME FIVE DAYS had passed, ship's time, when Rodney Trent, at the telephone, heard Thorn's voice:

“Trent? I promised to call you, before the crisis. Well, in one shape or the other, it's here.”

“What's happened?” asked Rod, breathless.

“A new factor has upset my calculations—Starbuck's arguments seem to be getting the better of mine. We may never see the universe above; but there will be more facts for your record. If you will come to the tower elevator, it will bring you to me.”

Those five days on the *Infiniteria* could not have been dull, yet the suspense of awaiting some outcome of the experiment had become a trying load. Rod hastened eagerly to the elevator, feeling ready for any decisive event.

A surprise met him, when he had mounted above the throb and hum of the energy converter, and came into the little conning pit with Thorn.

Beyond the transport dome, the metal ball of the *Infiniteria* had been changed incredibly. Its bulk had been consumed to a shrunken fragment, whose pitted craters were wilder than the Moon. Cragged metal mountains loomed starkly terrible against the death-black sky.

Still the converter beam bored into them, ten-fold more intense. Its hiss had risen to a piercing yell. The green

brilliance of the ray was eye-searing. The metal vanished under it, in a colorless, blinding flame.

Thorn did not look haggard. His big body was as quietly composed as ever, his manner calm, even detached. Only his dull eyes betrayed his need of sleep. Yet these five days, Rod knew, must have been exhausting.

“We've used a great deal of metal,” he commented, a little appalled by the work of the ray.

“More than it appears,” Thorn told him. “The telescoping sections of the towers have been drawn in two miles. The uranium is more than half gone.”

“It's going to run out?” Rod asked anxiously. “That's the trouble?”

“Yes,” said Thorn, and explained deliberately: “Now, Trent, we're near the limits of our universe. And we've run into a force I hadn't foreseen—though it is accounted for in Starbuck's mathematics.

“A kind of repulsion, a threshold of resistance. A barrier of force that we must burst through, to come from our universe into the one above. We can do it—I still believe we can. But it will leave us very short of power, outside.”

“I think I understand,” said Rod. “We'll still be very small, in the greater universe? And we won't be able to grow large?”

“Exactly, Trent.” Thorn smiled. “According to Starbuck's latest work, one single atom is all of any possible ship that could reach normal size in the superuniverse.”

“One atom?”

“And that atom of a theoretical ship composed entirely of uranium, and operating with perfect efficiency until every atom of it, save that one, has been turned into power. We aren't all uranium, Trent, and the *Infiniteria* is not completely efficient. We may never become large enough even to see the universe above.”

"Then," asked Rod, "we should be lost, always, in this darkness?"

Thorn shook his head. "Even here, our position can't be stable. Driving into this repulsion is like stretching a rubber band. When it breaks, it may fling us to some immediate destruction."

"When—how soon?"

"I don't know. Hours—or perhaps only seconds. The tension is mounting steadily. You see how much power we're using. The uranium is wasting visibly. Our drive would fling the Earth about like a toy balloon."

"Picture it this way, Trent. Imagine an elastic shell around our universe; a sphere of force, perhaps corresponding to the field of energy about an atom. We are plunging against that shell. It resists. But our power is all but infinite. Something must give way."

"And then?"

"And then," Thorn said, "we may know what infinity means."

Thorn said no more. He was watching his instruments. Waiting. Rodney looked at his face. The weight of a long fatigue was on it; but no concern was written there, nothing personal. It was smoothed with serene detachment, lit with a selfless unconcern almost divine.

Once again he glanced outside.

The green converter beam hissed forth from the tower under him. Mountainous ragged masses of uranium flared blindingly under it, and melted away. The hissing scream of the ray rang against the dead-black sky.

Rod gazed up into the darkness. It was changeless, absolute. He could not pierce it. Yet his mind saw vividly the tremendous energies driving them, and the strange, intangible barrier that held them back.

From Thorn he caught a sense of

strain. He found himself breathless, trembling with the effort of waiting. And he started unreasonably when Thorn said quietly, "Now, Trent."

Even if Thorn had not spoken, Rod would have known this for the moment. Yet the sensation of it was queerly hard to analyze. It was as if the *Infiniteria*, nearly motionless in the equilibrium of vast battling forces, had lurched abruptly when one of them failed—and yet in some other than the spatial dimensions, for certainly he had felt no physical, three-dimensional movement.

That instant passed. All seemed as before—for a dozen seconds. The green ray still bit into the uranium. The darkness pressed down, unprobed. Thorn's voice was unchanged, when he said deliberately:

"Now, Trent, we have come into the new universe."

His voice died. And that suspended moment of disappointing quiet fell, shattered. Peace was overwhelmed under mad confusion. Colored lights flared hotly. Alarm bells unneringly clamored. Angrily the telephone buzzed.

Outside, the green ray flamed into sinister red. Its hiss rose to a tortured, demoniac shriek. The red was snuffed out. The shriek was choked off. Silence came down like a toppling wall, and the unthinkable darkness of infinite night descended on the *Infiniteria*.

XI.

THORN BETRAYED no panic at what had happened, not even surprise. Ignoring the flashing, multi-colored lights and clanging alarm bells, he reached for the telephone.

Rodney Trent watched, queerly alert. Cold fear had gripped him. Fear, however, did not unnerve Rod; it always keyed him up, sharpened his perceptions, gave speed to his brain and cunning to his hands. Desperation strode

upon him, now, because he could not understand the danger, and knew no action to take against it. But he restrained any display of panic, and stood waiting, painfully alert.

Thus, before Thorn had done speaking on the telephone, his heightened senses had caught the heat. The air about him was swiftly warming; his skin soon prickled feverishly.

"You, Young?" Thorn's calm voice rose above the insistent bells. "Fuses burned out, you say? In the drive-field coils?"

As he paused, Rod felt the heat again; a wave that went through his whole body. Thorn's heavy face went grim. The bells abruptly quit ringing, but silence brought no relief.

Still holding the receiver, Thorn studied the illuminated dials.

"Young," he said, "the reaction is behind us, now. The threshold force is reversed. And the drive-field is no longer expending power; but picking it up. What we must do, then, is to shunt the overflow into the resistance coils and——"

Heat drenched Rod's mind. It scorched him like a fiery breath. He staggered dizzily against the instrument ledge, trying with his hands to keep the torture of it from his eyes. But that was in vain; this strange, consuming flame was born within him.

"—and hurry." Thorn's voice was desperately calm. "We're falling, with this force. The expansion is generating heat. Hurry—or we'll be vapor."

He dropped the receiver, gasping.

Rod was sinking in a sea of flame. It seared his body. His lungs were filled with suffocating fire. A white blaze put out his agonized eyes. Time seemed extended, until tortured hours intervened between the palpitating beats of his heart. Mercifully, at last, flame faded slowly into giddy darkness.

Then he was lying on the floor of

the conning pit. He was drenched with sweat. Hot clothing clung to him. The metal floor was hot under his wet hands. Trying to get up, he discovered a sick weakness.

But the heat was no longer increasing.

The blur cleared from his smarting eyes. He saw Thorn beside him, mopping at his heavy face. He, too, was struggling to rise.

Rod gasped, hopefully, "It's over?"

"For the moment," whispered Thorn. "But conditions outside have been reversed—and the *Infiniteria* isn't reversible. If I understand our situation, all the power we spent to burst out of our universe will now be returned to us."

"Just as if we had climbed a hill," offered Rod, "and started down the other side?"

"Exactly. And we've no brakes. No way to absorb and dissipate the energy of the descent."

"Those resistance coils?"

"They'll burn out in no time. We're falling, Trent, from the outside of this new universe to its center. And falling not in space alone, but also in time and in size. The heat generated will be enough to vaporize the *Infiniteria* and everything aboard—and heat the vapor about a billion degrees."

Thorn was still fighting for breath, as he whispered. Now his white, sweat-beaded hands reached up and clutched the rim of the instrument ledge. He drew himself up, shuddering. Unsteadily, he picked up the dropped receiver, calling urgently:

"Put Starbuck on the line. Quick."

Rod was getting to his feet. Thorn, at the instruments, gave him a moment's attention.

"Better take the elevator, Trent, below. More heat, when the coils burn out. The interior is less exposed."

"But you're staying here?"

"I must, for the sake of observation. No time to waste, anyhow, running."

"Then I'm going," Rod said, "to stay with you."

His voice shook with the effort of that decision. It was an obscure personal victory. A useless gesture, merely. He hoped to be of no service, yet he felt that the choice had given him some part in the struggle.

Thorn had already forgotten him, for Starbuck had answered.

"Will," he said, "we must find a way to use up energy."

Rod understood that one statement. The rest of Thorn's talk was unintelligently crammed with technicalities of the mathematical physics that had made the *Infiniteria* possible. He leaned against the ledge, still weak in the legs: Once he tried to look outside, and found the darkness still like a sea of ink against the quartz dome.

FOR A LONG TIME, hours perhaps, Thorn was at the telephone. Besides Starbuck's, Rod heard Young's name, and others. He scanned Thorn's heavy face for some hint of hope, but that serenely detached absorption wiped away all of himself, even his fatigue.

When the heat returned, Rod had a moment of panic. He was a fool—why hadn't he gone down into shelter?

Then Thorn put down the receiver, deliberately, and looked at him. His small, comradely smile made Rod suddenly glad that he had stayed.

"Well, Trent," Thorn announced casually, "the coils are gone. We'll soon be burning up again."

"Can they stop it?"

"Not with the coils. Our momentum is building up, progressively. Coils would never radiate enough heat to save us."

"Is there—another way?"

"Starbuck may save us. Such minds as Will's are precious things, Trent—and society has had him on starvation

half his life, while old Morrie was rolling in unearned lucre."

"What can Starbuck do?"

"You'd never believe it." Thorn smiled a little. "He knows ten times more about energy conversion than the man who invented it. He's going to reverse the reactions, Trent, clear through all four stages, all the way from the drive-field back to the uranium atom."

"He's going to absorb energy with the field, and deposit new uranium with the converter beams!"

Another, stronger wave of heat came down upon them. Rod felt sweat break from his hot skin. He tore open his shirt, futilely.

Anxiously he asked, "Can he do it?"

"If he has time," Thorn said. "He'll have a few minutes longer, below. But he has to change the circuits, and make some very delicate adjustments—"

Thorn's words were lost in a mist of consuming flame. Rod strangled, with molten metal in his throat. With maddening, painful blows, his pulse beat against his congealing brain.

He heard the clang of the manhole opening, then, and a little gasping cry at his feet. Clinging to his consciousness, against the battering waves of heat, he looked down.

He saw two heads: the wavy, platinum hair of Melanie Dean, and the smooth, dark head of Madeline Thorn. The two women were dragging themselves up through the manhole, helping each other.

Thorn, trying to assist them, fell weakly to his knees. The three were together on the floor. Rod clung desperately to the instrument ledge, to hold himself from falling upon them.

"Jarvis," he heard one of them say, "we've come to be with you." In the faintness of his mind, Rod did not know which one was speaking, nor did it seem to matter. "This is the end,

we know—this burning. We've come to be with you."

"We've talked together, Jarvis," said the other voice. "We're friends—we must be, because we love you. We came together."

"My dear ones," Thorn whispered, unsteadily. "I'm glad. I'm——"

Rod was conscious, then, of a new, consuming intensity of the heat. Thorn had been trying to say something more. But his flushed, sweat-drenched face went suddenly lax. He pitched limply forward, toward the open manhole.

He was going to fall through it, Rod thought, and down upon the great barrel of the converter. Rod grasped at him, weakly, and realized that if he released his grip on the ledge, he would only fall after him.

But the two women seized his arms. With a desperate, united effort, they pulled him back from the yawning opening. They collapsed beside him, on the hot floor, and lay three together.

A cool little joy soothed Rod's aching brain, as he sank down into the abyss of heat beside them, reaching in his last instant of awareness for the lever to close the manhole.

RODNEY was lying in a dark, fern-grown canyon. Cool shadows caressed him. Sweet, refreshing spray of an icy waterfall fell on him. He slept, escaping terrible memories of the flaming desert beyond the canyon, striving to forget its intolerable heat.

He woke in the little conning pit. The heat was gone—or, rather, going, for the metal was still warm to the touch; his clothing adhered to his hot, clammy body.

Thorn and Melanie Dean were busy over dark-haired Madeline, who was just recovering.

Rod, after a little, was able to get shakily to his feet. He looked out through the dome. The sky was still totally dark. The converter beam, how-

ever, had returned to hissing life. Its color was now the living blue of flame.

Looking carefully at the wild masses of uranium under the blue beam, Rod saw that they were no longer wasting away. Yes, slowly the incandescent patch of metal was building up. Starbuck, then, had succeeded.

"You coming around all right, Mr. Trent?" Melanie Dean asked warmly.

He nodded. They were helping Madeline to her feet.

"That terrible heat?" She was shuddering. "It won't come back?"

"No, my dear," Thorn told her. "Will Starbuck saved us—with probably the quickest, most brilliant bit of scientific thinking on record. We can go ahead, now, to explore the new universe."

She smiled at him, and at Melanie Dean, beside him.

"The three of us," she said, "together."

Thorn was opening the manhole.

"Young's coming up to take charge a while," he said. "They had it easier, below. I believe we all need a little recuperation."

Rod agreed.

XII.

DARKNESS was still above the dome, five days later, when Rod came up into the conning pit, to rejoin Thorn. When he looked out, he saw that the blue beam had already restored most of the uranium. The *Infiniteria* was almost a sphere again, although its surface was yet rather unequal.

"Well, Trent," the big scientist greeted him, "we'll soon know a little more of the new universe."

"What are you expecting?"

"I'm waiting to see." Thorn chuckled. "I have, though, allowed myself a few speculations. Theoretically, physical conditions here ought to correspond somewhat with those in the

old universe. And the instruments register a zone of radiation ahead that seems to resemble our cosmic rays—that's why I called you.

"Radiation implies matter. Matter, from its own nature, means gravitation, which will concentrate it, swing it through orbits in space, in the form of planets, suns, galaxies. But I'm waiting to see."

"Aren't we very large?" asked Rod. "Larger than our whole universe?"

Thorn hesitated, rubbing his chin.

"We are," he said slowly, "yet we are very small in the scale of this universe. All our old universe is apparently only one single atom of this one."

"Here, though, we have a riddle. The *Infiniteria* increased in size, until our universe could not contain it. It burst out. And, outside, it has still been expanding steadily, until it is nearly normal size in the new universe."

"But this is the riddle—a thing that neither Starbuck nor I can account for. Our expansion in this universe has consumed no power. On the contrary, the used uranium has been restored. When we reach normal size, we shall have it all back, except that lost through inefficiency."

"That fact has amazed both of us. But soon——"

He broke off, intently staring upward through the dome.

"There!" his deep voice throbbed eagerly. "Light! We can see."

Rod looked out. The long darkness, indeed, was fading. A feeble red washed the sky, became steadily stronger. The increasing light revealed the *Infiniteria* placed in a curious situation.

"We seem," Rod observed excitedly, "to be in a kind of deep pit."

"A crater," suggested Thorn, "in the surface of some planet of the new universe."

On every side mounted vast vertical precipices. The ship hung in the throat of a colossal dark funnel. Between those looming, Cyclopean walls, the sky was no more than a scrap of scarlet. As the ship still expanded, the walls contracted, drew in.

Thorn sprang to the instruments.

"We must rise out of here," he cried. "Or we'll be caught——"

He was flinging down a series of keys. The dark smooth walls fell away. The scarlet sky grew wider.

"Now," exclaimed Rod, burning with anticipation, "we shall look upon the new world——"

The words congealed in his throat. The strange funnel, as they came out of it, assumed a curiously familiar form—it took on the shape of a canna bloom, incredibly enlarged.

And the vast precipices that pushed up, mountainous, in the distance, to the purple-red sky—— He seized upon them with bewildered recognition.

Thorn's startled words anticipated him:

"The laboratory at Morning Slope!"

"We're back in our own world, where we started," whispered Rod, dazedly. "That pit was a flower. When we started, the ship was lying on the grass, just beyond that row of lilies——"

He was pointing down, at the black, tremendous forest of the lawn, when speech once more deserted him. There, looming above the huge grass, reposed an immense, shimmering metal sphere.

Voiceless, he gripped Thorn's shoulder, pointing.

"Yes, that's the *Infiniteria*." Thorn's voice was hushed with a great amazement. "The *Infiniteria*, with all of us aboard. See, it is rising for the beginning of our flight!"

Watching in complete bewilderment, Rod saw the gleaming ball of metal

float gently away from the grass. Expanding swiftly, it drove upward into the gulf of the purple-red sky. It was growing in size so fast that it did not appear to dwindle with increasing distance. It vanished at last in tenuity, and the strange sky was blank.

"So!" remarked Thorn. "We returned in time to see ourselves set out upon the journey."

He guided the *Infiniterra* over the dark, gigantic forests of grass, and set it down softly upon the spot from which they had just seen it depart.

"That," said Thorn, "is that." He snapped down a key, and the hiss of the blue converter beam ceased beneath them. "We set out to reach infinity. And here we are."

XIII.

SOME HOURS LATER, *Infiniterra's* time, the great cube rose up the square shaft, carrying all the passengers away from the ship. Rodney Trent contrived to be again in the conning pit with Thorn.

"Still, Dr. Thorn," he said, "I can't understand it. I know we got larger. I saw the Earth shrinking behind us, millions of miles away. I saw it flying around the Sun, ticking off years like seconds. Yet we're back here, small instead of large. Back before we started!"

"I've been talking two hours with Starbuck," Thorn said, deliberately. "We reconciled our mathematics well enough—we each had just one angle of the truth. Together, we worked out an hypothesis. It seems to account for all the facts.

"And it gives us a new cosmogony."

Intently, Rod waited, while the big, grave-faced scientist read his instruments, made some change in their course.

"Strangely, the reasoning is childishly

simple. The thing should have been apparent from the first—if the most obvious solutions were not often the hardest to arrive at.

"The infinity paradox," said Thorn, adjusting dials and keys as they mounted into the weirdly changing sky. "Einstein came at the key to it long ago, with his concept of curved space. Go far enough in a straight line—in any direction—and you find yourself back at the starting point.

"We should have deduced the rest of it from that; it's simply so obvious that we overlooked it."

"I don't see——" objected Rod.

"Don't you? Well, the identity of time as an actual fourth dimension is well recognized. There is no real, absolute distinction between time and any spatial dimension. That means that time is only another direction. Go far enough in time, then, and you return to where you were.

"To-morrow is the first day of the past; yesterday lies in the future—ininitely remote around the circle of time."

Rod's bewilderment did not stop his swift fingers, inconspicuously busy in his coat pocket, setting down these amazing words.

"The relatively paradox applies also to extent. Size is relative. The infinitely large is also the minutely small; the macrocosm and the microcosm are identical. When we became too large to exist longer in our universe, as we thought, we became the smallest particle in it.

"Infinity ever brings us back to the starting point.

"And this, Trent, gives us the clearest picture of the universe that science has ever had. Wave mechanics postulated, long ago, that the waves of every electron pervade the entire universe—but nobody realized the meaning of that, before to-day."

"I don't—yet," commented Rod.

"Then here it is." Thorn smiled. "Every atom in the universe is also the entire universe; conversely, the universe is identical with every atom in it. That is why matter and energy are indestructible: destroy one atom, utterly, and you would annihilate the universe.

"The universal atom, at the beginning, is obviously uranium. It is in motion, internally. The motion accounts for the dynamic state of the universe, for the passage of time.

"It is normally disintegrating. Each individual atom is its identity at a different instant of time, at a different moment in its distintegrating life. That explains the occurrence of apparently different kinds of atoms, of iron and oxygen as well as uranium."

Rod tugged at his ear, pondering.

"This sums up the voyage, Trent. In space, we went around the universe. We completed the circle of time. We went through the cycle of size. And here we are."

The cube soared above the dwindling globe of the *Infiniterra*. The purple gray of cosmic radiation faded into darkness, and darkness gave way again to the redness of the ultra-violet. The mountains of the laboratory buildings shrank toward their proper dimensions.

The cube settled upon a lawn once more velvet-green. The sky changed from crimson to summer blue. The shrinking gray buildings came to rest. Thorn turned a key on the instrument ledge, repeating:

"Here we are."

"Right where we started," said Rod, still lost in the shadow of a great bewilderment.

"Not quite," said Thorn, soberly. "My life, at least, will be changed. I've found a new scale of value. I see, now, Trent, that I have not been a living being at all—but just a calculating ma-

chine. No, I'm not where I started."

He opened the manhole.

"If you'll excuse me, Trent, I've some one waiting below. Two persons, in fact."

He chuckled, with a light, genial happiness new to Rod.

They went down together, and Morrison Cross stopped Thorn in the hall. His long face wore an unwonted snile, curiously gay. He was spinning the snake-headed cane with an amazing youthful dexterity.

"So we're back, Jarvis?" he said jovially. "You got fooled once, yourself!"

"Anyhow, Morrie," retorted Thorn, "we fooled you for awhile."

"So you did," admitted the gaunt man, cheerfully. "It was good for me, Jarvis. Glad I went. Had a lot of time to think, in those ten days—and a lot to think about. Changed my point of view, Jarvis. Find I'm not so important as I thought. See an obligation."

He poked at Thorn, boyishly, with the cane.

"Atomic power can do a lot for the world, Jarvis. It can be used to make the world a paradise."

Just then the student couple, Paul and Martha Lee, arrived.

"Dr. Thorn," the big, hazel-eyed girl broke in impulsively, "I'm awfully glad you brought us. It has been wonderful. Our return was like a miracle of God. He willed that we should go on living, serving."

"Before, Paul and I wanted to die. Now we never could. The world is so different, now; our little troubles seem so small, and there is so much that we can do."

She, and thin, stooped Paul, shook Thorn's big hand, warmly. Rod glimpsed the glow of a new life in each of them.

Thorn turned away, then, to meet his tall, dark-haired wife, and willowy,

platinum-headed Melanie Dean. Looking at the three, smiling together, Rod wondered.

Outside the gleaming, nickel-white cube, on the yielding green of the lawn, Rod found himself near red-haired Ellen Cross, and Will Starbuck, his blond head bare to the sun, his smooth, brown face smiling down at the vivacious girl.

Starbuck saw him, and cheerfully demanded congratulations.

"Ellen has just agreed to marry me."

Rod met the demand, with enthusiasm.

"Where's Jarvis?" the girl asked. "We must thank him for the trip." Her gay smile sobered a little. "This would never have happened to us, Will, if we hadn't gone."

"So we must," agreed Starbuck, genially grave. "It's hard to explain, but our glimpse of infinity has given us a clearer view. It has made the world a simpler, happier place to live in."

"It seems odd, Will, to remember how you used to treat me—like some foreign untouchable."

"And just as odd," he reminded her gravely, "that you told me that love in you was dead."

Well, her love wasn't dead, now. They seemed to be forgetting him. Rod drifted on, pondering upon the human implications of the vision they all had

had of infinity. Why had it made such a difference? Why had so many fears and uncertainties vanished, leaving only clear, solid realities?

Was it because the riddle of the universe had bewildered them all, burdened them with subconscious fear? And now, when they had the whole view of the universe and the small place in it for each, all reason for fear had gone? Or was it something deeper, some supernal contact?

Well, he had to write up his copy for old McGreggor.

He went out of the laboratory, and walked the half mile to the station. As he walked, and on the interurban, he pondered his problem. After all, where was the story? Nobody dead. Nobody hurt. Everything just as it had been. Could he convince McGreggor that he had been around the universe, in two hours?

He could do the story—somehow. He had his notes, of course. He could corner Garrick, and make him help with the scientific end.

Rodney was getting off the train when he remembered the one thing in the world he really wanted to do. Mrs. Connors was still waiting for his rent money, to buy her invalid husband the microscope—still, after these millions of years, it was the old gentleman's birthday. And Rod turned back toward his boarding house.

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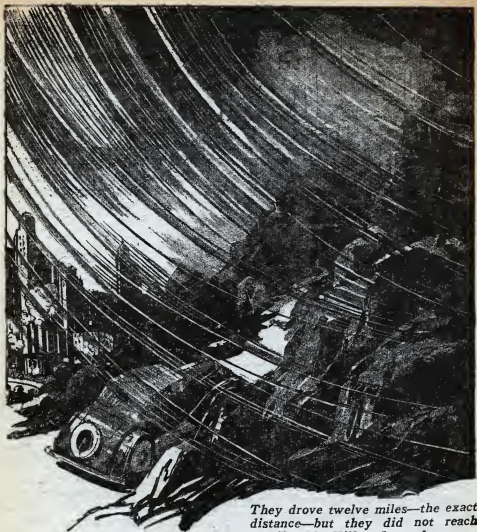
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They drove twelve miles—the exact distance—but they did not reach Temple Hills. Instead—

The Upper Level Road

A story with a thought-variant idea of warp

by Warner Van Lorne

WHEN HE LECTURED, he lectured with pursed-up brow and concentrated purpose. Professor Gamaliel Eberhardt was not a man who understood levity.

His main subject was geological history, but Farraday College being small, he found it necessary to carry such kindred subjects as prehistoric civilizations, history, and prehistoric architecture.

The college would gladly have widened his subject matter still more, but Professor Eberhardt's studies clung so tightly to certain lines of thought that it had been found impractical. So for five years his thoughts had not been drawn from his one source of pleasure and profit. Some said the professor's brand of concentrated bisection of the wonders of the past imbued his students with a touch of his own mild insanity.

And then, one day, in the midst of one of his most profound expositions of pre-Egyptian monuments, John Hayden laughed! A deathly hush fell over the room. Dr. Eberhardt laid down his pointer, wiped his glasses, and cleared his throat.

"Is there something unusually mirth-provoking in this room, Mr. Hayden? Or is the point I am making ludicrous to you?"

The professor was at his best. His cheeks were puffed out like a frog's sides. He seemed on the verge of apoplexy.

Perhaps it was fortunate that the five-minute bell rang just then. For the good doctor was staring hard at John Hayden, and Hayden, eyes shining, laughed again.

"Class dismissed."

There was a concerted rush for the door. The impossible had happened! It called for discussion, but not in the august presence of Professor Gamaliel Eberhardt!

The room was suddenly empty. Dr. Eberhardt still stared at John Hayden, and John stared back—still chuckling.

"Well?" The professor seemed surprised that John had not joined the exodus.

"Professor, I made a discovery."

"Just when you laughed? Had you been paying attention——"

"But I was paying attention," Hayden told him. "I was, as usual, pondering upon the very noticeable discrepancies in the states of advancement in the various civilizations—when suddenly it

came to me. It was funny. You are wrong. I have been wrong; every bit of teaching on these subjects is erroneous because we have all overlooked one vital point."

The professor reddened again until he seemed about ready to burst. This jackanapes, this upstart, this—— Telling him that his life work was in error! For just an instant he forgot his perfect English under the stress of excitement.

"Und you're telling me dot my whole life iss devoted to errors!" He sat down suddenly, weakly, and placed a hand over his heart.

"No, Dr. Eberhardt. No! Your studies have led to the greatest discovery of the entire period of our written history. It's only that once you see, it makes everything seem ridiculous! I had to laugh at myself. When you see it, you too will laugh."

The professor relaxed slightly. He was staring at John Hayden with eyes that held a shadow of doubt, and something of wonder. He seemed about to speak, but John held up one hand and continued.

"It came to me like a vision—a folding back of the veil of blindness. Suddenly I saw! And the vision held both promise and threat. I saw an explanation for a thousand things which have puzzled the world. I saw that there is no reason for men to starve, or to lack work, or to worry about being unemployed; or even to work!

"I saw the true explanation for things which we struggle to explain—and it made me laugh. It is funny in a way because I haven't even tested the truth, and yet I know."

Something in the calm, confident face of his student made the professor lean forward. His brows drew together again, and he spoke slowly as if resigned to the tearing down of the foundation of fifty years' work.

"Why did you not speak?"

John looked into his eyes, and smiled again.

"It will be up to you and me to decide, Dr. Eberhardt, whether the discovery should ever be spoken. Perhaps it is best that we never mention it. That we must learn."

"We?" The professor's brows resembled a sandy beach crisscrossed by heavy traffic.

"I have a small car," John explained. "You have no more classes this afternoon. If you believe me sane, let's try to prove what I see. It may mean the most wonderful adventure that ever befell two men. Just you and I. I have the money to travel, and if we're right we'll spend the summer seeing things that are not supposed to exist. Don't ask me to explain. Let me show you."

Dr. Eberhardt rose and came forward to stand over John like a patriarch. He tipped the student's head back and gazed deep into his eyes.

"You are sane," he said slowly, "sane and logical. I will go."

THE little roadster rolled along the dirt road which led to a crossroads village twelve miles from Farraday. John Hayden's eyes were staring ahead intently; his body was tense. The speedometer registered five miles from the start. The professor had caught something of his tense expectancy and sat like a statue beside him. Between them lay a loaded revolver. In the left pocket of the car rested another revolver and a box of cartridges. Stuffed in beside the gun were six red flares. Two flashlights lay on the little shelf behind them, with a supply of new batteries.

Six miles. It was nearing four o'clock in the afternoon. John grew more tense, as if he were guiding the car along the edge of a cliff where a slight turn of the wheel might cast them into eternity.

Twenty minutes passed. The speedometer registered twelve miles. The

ruts in the road were close together as if nothing but wagon wheels had passed over the road in a long time.

A stone wall—the old-fashioned kind—followed the road on the left side. They came to an open gate, turned through it into a lane for a hundred yards, and stopped before the door of a huge stone castle which had all the signs of great age written upon it.

The stones were furrowed and porous from the rains of ages. The window ledges were deep but no sign of glass appeared in the frames. There was no sign of life about the place, yet it seemed almost habitable.

John Hayden's eyes were shining as he brought the car to a stop and turned to the professor.

"We made it," he said softly, and again: "We made it."

Dr. Eberhardt tore his attention from the pile of stone and turned to his student. His eyes, too, were shining with a strange luster.

"We traveled twelve miles. That is the distance to Temple Hills, yet we do not arrive. Why?" And yet the professor's voice seemed not so much puzzled as to want confirmation of his thoughts.

"That is right, professor. Now you know why I laughed. I came here once before, but only to-day, as you lectured, did I discover the reason why."

"We have been driving on the 'upper level' for the past five miles. This time we will investigate. The last time I thought I was lost and turned back." And suddenly, like a beam of sun bursting through a tempest-laden sky, the professor was laughing. John Hayden had never heard him laugh before!

"Fifty years," he said, and shook his grizzled head. "Fifty years and I learn what I thought I knew." He opened the car door and climbed out gingerly while John stuck both revolvers in his pockets and got out the other side. Then for a moment the two men—a savant

of fifty-eight, and a boy of twenty—stood and laughed at each other across the hood of the little car which was making history look funny.

Neither trusted himself to draw conclusions in words. John awaited the confirming proof which the professor's knowledge would give, and the professor waited for John to lead the way. Yet perfect understanding existed between them. Both seemed to know that they would find what they were seeking.

After a moment John went back and got the flashlights. Then he joined the professor and side by side they stood gazing up at the pile of stone before them.

"Shall we go in?" John's voice trembled a little as he spoke, as if this final step were of such portent that he hesitated. And the professor laughed again.

"You discover, but hesitate to explore," he said, smiling. "I am led to the portal; I cannot go back until I know."

Side by side they walked across the rutted stone of the portico and through the doorway, stepping over the remnants of what had once been great planked doors. The wrought-iron hinges were still in place and the professor's beady eyes gazed at them for a moment in awed wonder. Then he bent to examine the planking where it had fallen.

They were inside. A great room stretched before them, fully a hundred feet long and forty wide, with great fireplaces set in the middle of each of the four walls; fireplaces big enough so twenty men could have stood together in each one!

John Hayden stood in the semigloom with eyes shining as he gained an impression of the greatness of the place, the long, massive stairway at the far end, the candelabra set in the walls, with space for two hundred candles to light the room.

The professor was on his knees examining the bits of carpet which still

held together in spots on the floor. Soft exclamations came from his lips now and then.

After a bit he got to his feet and went to examine the candelabra. John watched while his trembling fingers removed one from its socket and turned the beam of his flashlight on it.

"About the year 1,000, John Hayden, if my studies have been of any use to us, this country was supposed to have been peopled solely by savages! It appears to me that it is a feudal castle equal to those which stand in Europe. But the preservation! Decay seems to be very slow."

John nodded, thoughtfully.

"I must keep an eye on the car," he said. "We'll need it, and though I don't think so, we might have company."

"Yes, yes, John, by all means." The professor spoke as he moved on to examine the remains of a great table which stood against the far wall. John stepped out into the late afternoon sunlight.

There was the faint whisper of a breeze as he reached the portico. He looked back once, to see the professor bent over the wreckage of the table with searching fingers, then went on out to the car. A vague uneasiness crept over him. Logic told him one thing, instinct another. Was it possible he was in an unpeopled country? The desolation said he was, and yet—

Something impelled him to walk around the castle. It wouldn't take but a few minutes. The odds were Dr. Eberhardt was too absorbed even to miss him, and he knew he'd feel better.

The long tangled grass at his feet was comforting as he strolled along the great wall. The sunlight was warm and the air balmy, just as it had been in Faraday for a week past. He turned the corner toward the side of the castle. It was, he guessed, two hundred feet long and a hundred deep. Turreted towers

stood high in the air at the four corners. It was roughly oblong.

He turned again, and paced along the back. For a long distance he could see fields of tangled grass, like a prairie. An occasional tree broke the monotony, but the trees seemed gnarled and twisted, as if only the hardest of them had managed to remain within sight of the castle, and these were twisted and bent by storm and wind.

John had decided that logic was right before he turned the third corner. And then, right at his feet he found a path, a well-worn trail leading off across the field, and ending at a break in the masonry of the wall, big enough to admit a man. He stooped and peered in by the beam of his flashlight. There was no sign of an invader, but the pathway showed where it entered and crossed a room filled with *débris*! John fingered the revolver in his pocket and hurried his steps around to the front.

He breathed a sigh of relief as he saw the roadster and a quick examination proved it had not been touched. Then he entered the door, and the hair crawled on his scalp. Professor Eberhardt was not in the room!

PANIC held him speechless for a moment, then he swallowed hard and called:

"Oh, doctor!" He listened intently but only echoes answered—echoes which called down the stairway, which called from the shadowy ceiling, and teased from the inside of the huge fireplaces. They seemed to leap back at him from every direction.

"Oh, doctor!" He called again at the top of his lungs, backing against the wall as he did so. A revolver was in one hand as he darted quick glances into every corner of the room.

The castle seemed as deserted now as it had been before they arrived. He had to explore. Probably the professor

had simply gone into another room, but if so, why didn't he answer?

After a moment John regained some measure of self-control. He examined his revolver and his flashlight, then moved slowly across the room toward the great staircase. His eyes cast quick glances over his shoulder every instant. They darted into every corner, and seemed to cover all directions at once. Wherever a shadow loomed he turned the flashlight beam. But the room was as empty and deserted as it had apparently been for a thousand years.

The echo of his footsteps on the stone floor was like the beat of tom-toms. The trip to the stairs seemed endless. Yet he found himself slowly mounting them, and his fear was mingled with something of the majesty of discovery.

The twenty-four steps ended in a great upper hall, from which led doorways into other rooms. And midway of the upper hall, another hall bisected the huge building lengthwise.

John stood a moment, alert, listening, then called again at the top of his lungs: "Dr. Eberhardt!" And once again mocking echoes were his only answer.

Again he moved ahead, stopping at the first doorway on his left to throw his flashlight about a great room in which there stood a well-preserved bed and chests. The wonder of it overcame his fear somewhat and he moved ahead. Six spacious chambers along the hall contained no sign of having been disturbed in a thousand years. He toured the rooms off the long bisecting hallway to the right, with the same result. In the last room he found the doorway to the turret tower which stood over the corner where he had seen the strange pathway leading from the basement. With a heavy heart he mounted the winding steps.

For a long time he stood gazing out across the countryside, from between the raised stones which had been set for protection along the circular wall of the

tower. Still no sign of life rewarded his search.

The rest of the upper castle was barren of life. He had heard no sound and at last retraced his steps down the great stairway to the main hall, and turned with heavy heart to search the lower rooms.

The sun was setting and John dared not attempt the return to Farraday after dark. The discovery was too new.

The main floor produced no slightest sign. The great basement was empty. John had reached the feeling of absolute zero when he turned to the next to the last room, the one which would adjoin that into which the beaten pathway led.

Here he stopped and an involuntary whistle escaped him. Three crude rustic chairs, a table, and a cupboard stood out as clearly modern! There was no dust! The room had been occupied—and recently! That awful feeling of panic seized him again. It was getting dark! The professor had disappeared!

John came out of the castle through the hole in the masonry and stared along that beaten path, then turned slowly and picked his way around the castle for a second time.

The car still stood unharmed before the portico. Impelled by some unknown reason, John put up the curtains and fastened them.

Slowly he started on to complete his circuit of the castle. It was dusk and the wavering shadows played tricks on his eyes. His flashlight beam darted here and there impotently until he reached the pathway again—and suddenly he heard voices drifting down the wind!

John Hayden flattened himself against the side of the castle in the shadowy niche formed by the circle of the turret where it joined the straight wall, and waited silently, as the flesh crawled up and down his spine.

Presently along the path came a motley procession. Seven men, two

women, and three children, the youngest a child in arms. And at the head of the procession was Professor Gamaliel Eberhardt!

The procession turned the corner and started toward the front. John tensed, as the good doctor came opposite to him, and pointed his revolver.

"Halt!" he said hoarsely. "One move and I'll open fire."

Then as the little parade froze into immobility he turned to the professor.

"If you are a prisoner, doctor, we'll settle this right now!"

But the professor raised his hand and shook his head.

"I'm not a prisoner, John. I was at first, but simply because they didn't understand. We are all friends. Put up your gun. There is much to be explained and it grows late."

"But I—I don't quite understand." John hesitated as his gun arm dropped slowly to his side.

"Let's go around front where we can sit comfortably on the portico," the professor suggested. "Then I will explain what they do not understand, and will point out to you a plan that has been formulating in my mind. This, John, is the population of New Temple Hills, a settlement by accident. You, perhaps, personify Columbus, but these people personify the Norsemen. Some of them have been here eleven years!"

Twelve people seated themselves uneasily on the edge of the stone portico which stood about two feet above the ground. John's startled eyes grasped the fact that most of them wore garments of a coarse homespun material somewhat similar to burlap. They seemed baffled, yet expectant. Something like hope gleamed in their darting eyes.

Dr. Eberhardt drew John aside a few steps, careful, however, to remain in full view of his audience.

"I'm not going to tell them everything, John. You and I haven't even had time

to compare notes, but this thing looks so big I don't want to take them back. I see vast possibilities. This can be our headquarters. I want them to stay here and form the nucleus of our help at the castle. From here, if I understand correctly, we can undertake even to force peace on the world when the time comes. Will you let me speak for both of us for to-night?" The professor's eyes gazed anxiously into those of the student who had laughed in the midst of his lecture six hours before.

"Of course, professor! We can decide later what course is best to follow. Right now you are in command. I—your suggestion about world peace—if it—it's true—we could—— It is overwhelming!"

DR. EBERHARDT cleared his throat as he took his place before the long row of hopeful, eager faces—exiles from a modern world. His cheeks were flushed and his eyes shone. He was in his element again, lecturing to an eager class.

"My friends," he began slowly in his best classroom manner, "you share with us a discovery which may lead to peace on earth. It is so great that the name of every one of us will be written in letters of gold on the scroll of history. We are all pioneers. To you will go more than your full share of credit. The hardships you have undergone have paved the way. They will be lightened from now on, but whether you can ever go back to your old world is a question."

There was a slight restlessness at this, but the professor held up his hand and continued:

"Some of you might not care to go back when I tell you that no one back where you came from would believe your story, and those of you who have children would be outcasts from society. All you could have there will be yours here. Clothes, entertainment, books; everything can come to you in greater measure than most of you could afford

them in the world you left. And it is another world, my friends.

"How many of you, in years past, have read about the finding of buried cities by archaeological expeditions?"

Every adult hand was raised in the air, though the look of bewilderment remained in the haunted eyes.

"Ah! That is good. Then listen: If in some places on earth the surface buried the ancient cities, can you not see how, in other places, the modern surface of the earth might be below them?"

One man leaped to his feet, an excited light in his eyes. He pounded one fist into the other and fairly danced.

"That's it! I knew it. We got lost in a strange distance!"

John and the professor exchanged glances.

"You are quite right," Dr. Eberhardt told him, "quite right. And you, sir, have been the carpenter here, haven't you? You planned and built the loom which weaves the cloth for your clothes. You're the man who tried out the various roots until you found edible ones to be grown in your gardens. And you discovered the wild potatoes and pruned them until they tasted like home."

The man had sat back on the step. At each question and statement he nodded soberly. He was a wiry little man, about five feet two, with keen, intelligent eyes.

"Back in Temple Hills you were known as the village drunkard, Sam Bailey. No one mourned overly long when you disappeared," the professor told him. "Sam, if you went back, you would go back to that. You have a mission here, and a new day is coming. You have made life for these people fairly comfortable. I will leave it to you. Shall we make a new world here or will you try to return to your old life?"

Sam Bailey got slowly to his feet. He walked around the little roadster, exam-

ining its bright, new enamel as best he could in the gathering darkness. Then he came back to face the professor.

"When could we start remaking life here?" he asked simply.

The professor looked at the dark sky, then at John Hayden.

"We dare not try to return to-night," John said. "In the darkness we might never get back. But to-morrow we can go and return with a truck. To-morrow we can start."

Sam Bailey's face was solemn in the twilight.

"My new friends," he said slowly, "I am the leader at New Temple Hills. And I speak for us all. We will stay and work if it will serve a purpose. That is all we ask; that and some entertainment."

JOHN HAYDEN deposited a reborn professor at his home in Farraday at ten a. m. Saturday morning, May 15, 1941. At four p. m. a five-ton truck loaded with mattresses, folding cots, tables, chairs, books, canned foods, magazines, and six acetylene stoves stopped to hook on a trailer containing shovels, hand tools, carpenter tools, seeds, six hams, a side of beef, and six smoked hams with many more things tucked in wherever there was the slightest bit of room! The professor made a dive for the driver's cab, chuckling as he dropped a bag on the seat between himself and John.

"We haven't so much time," John told him. "What's in the bag?"

"Six revolvers, two knocked-down rifles, and three hundred rounds of ammunition for each!" The professor laughed aloud for the second time in two days! "It occurred to me that there is a possibility of this dimensional condition being only occasional," he continued, "and I have provided against that contingency somewhat."

The truck rolled down the street and out the road toward Temple Hills. But

it arrived at New Temple Hills without mishap and found six men waiting anxiously at the castle. One had remained at the little settlement to protect the women and children if need came, against the wild things which occasionally roamed the plains and ravished the all-important gardens.

The great main hall had been swept free of the debris with brush brooms, and wood had been piled in one of the huge fireplaces. Dr. Eberhardt magically produced candles and set one of the men to stocking the candelabra. He brought forth brooms and had the room given a final going over.

"Why," he asked Sam Bailey, "is your settlement so far from the castle?"

"Water." The reply was laconic.

"M-m-m. John, do you suppose we could get drilling machinery and have wells drilled, and plumbing installed?"

"Why, yes. In time. It would take weeks, of course. But first we need bedding and lumber. The truck is being loaded to-night."

Tears glistened in old Sam Bailey's eyes. He stood stock-still like a statue, while they rolled down his weather-beaten cheeks. Eleven years he had been an exile from his world, and now—it was too good to be true—his world was coming to him!

Darkness saw a roaring fire in the hearth, and the side of beef turning on an improvised spit. A great barbecue by candlelight, in the vast ancient hall which had once felt the footsteps of medieval warriors, before it had been cut adrift from progress by the warp of the earth's surface dimensions.

The chill May wind played tricks with the candle flames. Six folding tables stood side by side to make the banquet board. China dishes, such as the three children had never seen, held canned delicacies which their elders had not tasted in years!

It was a glorious evening for the residents of New Temple Hills, and there-

after, each year, in the "upper level" country, May 15th was to be celebrated as the day of the beginning of New Time. That night a dollar alarm clock ticked in each house of the settlement for the first time.

SIX WEEKS LATER as an enormous clock on the center mantle chimed nine thirty, John Hayden and the professor sat in comfortably upholstered chairs before the hearth where a cheery blaze killed the chill of evening in the great hall of Hayden Castle.

"I have money enough for a while," John was saying, "but of course it will take more than a fortune."

The professor turned toward him soberly. "I know that, John, and I have borne it in mind in my calculations. Remember the *Cyclops*, the United States naval auxiliary which sailed into the unknown about 1920? We may find that. It had a full crew aboard. There are certain treasures that we could easily locate. Cocos Island must have brought its treasure to the "upper level," for it has been blasted from end to end by treasure parties. That would finance us safely."

It was a different Gamaliel Eberhardt than the one who had dismissed his class six weeks before because a student had laughed. This man was keen, alive, and planning to interfere with the trend of time on the known world!

The castle had been completely modernized. Frames had been fitted into each of the ninety-six big windows. Bathrooms had been installed—six of them! Wells had been drilled; electric lights and refrigerators had been installed. The professor had one room off from the main hall equipped as a study, and his calculations had filled many reams of paper since the end of the college year. Farraday College was only twelve miles away by the road they traveled; but by another measure it was nine hundred years in the future!

John and the doctor each had a mammoth bedchamber. Both of these rooms also adjoined the main hall. On the other side of the huge room the doors opened into the renovated dining hall, kitchens and three comfortably fitted rooms for the help.

Two men and one woman were on constant duty at the castle. The other residents of New Temple Hills were busy planting their newly acquired seeds and tending their gardens. These had been greatly enlarged since the acquisition of tools, and the three mules which had been brought over from the twentieth-century level!

"I should like to attempt Atlantis," John broke the silence again after a long time. "We might miss—but I think it's waiting for us."

The professor frowned as he answered. "I have been working on warps for six weeks almost unceasingly, John. It is dangerous to try but I think we could find it, only——" His voice trailed off.

"Only what, doctor?"

"John Hayden, the world is on the verge of a disastrous war. I have proved to my own satisfaction that we can find an 'upper level' in very nearly this plane in the northern French provinces, the south German provinces, northern Italy, southern Austria, parts of the Balkans, and on the plains west of Moscow!

"You and I can put an end to any war that starts in those areas, John. Don't ask me too much, yet, but I know we can, provided we continue our studies for a few more weeks.

"On the other hand, to find Atlantis we must go at least two levels above this one. We might make it. It is less likely, but still possible, we might return.

"Would you be willing to wait, John, until we have stopped the first great war move in Europe? If you will—and it may mean a year's delay—I promise you that we will visit Atlantis."

John gazed long and thoughtfully into the flickering flames. Surrounded as he was in medieval comfort with modern trimmings, he was aware that beneath him, or in some inexplicable way, around him, was a twentieth century village called Temple Hills. No, their first hypothesis had been right. It was beneath! They were on the "upper level." And that explained why no ruins are found in great stretches of the modern earth's terrain. In some spots ruins are on the surface, in others beneath the surface—and in still others, above the surface.

The professor said northern France and southern Germany were above—on the "upper level!" That meant that at some point in each of those countries the ancient surface crossed the modern surface level like a subway going into the earth under a hill, then running into the air over a valley!

But to stop a great war? Dr. Eberhardt's calculations must have progressed beyond his wildest dreams. With a sigh he drew his gaze from the fire and looked toward the professor.

"I guess you win, if you think we have a chance, doctor. But meantime we need to locate a treasury. Have you studied the warp at Cocos Island?"

Gamaliel Eberhardt smiled slowly. "Do you remember where the *Cyclops* disappeared?" he asked.

"Wasn't it off the coast of southern California?" John asked.

The professor puffed on his brier pipe for fully five minutes before he answered. "And what relation does that bear to the location of Cocos Island?"

John jumped to his feet. "You've got it," he shouted. "It's true! Why, we might even find the crew of the *Cyclops* on the island!"

Sam Bailey's face appeared suddenly in the doorway leading to the dining hall.

"Did something happen, professor?" he asked anxiously.

"Yes," Gamaliel Eberhardt answered solemnly. "John Hayden just threw a fit. Come in, Sam, and sit down a minute. Have you ever considered the possibility of fortifying this castle? It seems to me that it has possibilities which would make it almost impregnable."

"Fortifying it?" Sam asked, puzzled. "Against whom? Oh, that reminds me — I had a dream when I first came here that I have always wondered about."

"I dreamed that I was asleep in here on the floor when I heard a terrible racket outside. I was scared almost to death, but got up enough courage to go to the door to see what it was. When I reached it there were a whole lot of men outside on the portico, but when they saw me with my pipe in my mouth, they turned and ran."

THE NEXT DAY panic dwelt in the breasts of the two warp explorers. John drove in to Farraday for supplies—and didn't arrive! He came tearing back to the castle at breakneck speed and rushed into the professor's study.

"I missed, doctor! I missed," he said breathlessly.

The two gazed at each other, each seeking hope. The thing they had dreaded most had happened.

"We might have known," the professor told him, "that if the road led back in the ordinary way, New Temple Hills would not exist. So far, we have been lucky. Now you must find the combination. Go back at once—and this time be careful. Remember every rut. Try until you make it."

John smiled, and breathed easier. After a moment he went out. But Professor Eberhardt did not return to his studies. Instead he paced the floor. "If he fails," the doctor muttered over and over again, "all our plans are in vain. If he fails, the discovery might better have not been made!"

John Hayden drove slowly along the

road from the castle, very slowly. He kept one wheel in the rut of the roadway. So much depended on the key to the shift from one level to the other. It must not be chance. He must know the way.

One mile, two miles, at a snail's pace. No faster than a walk. Always before he had driven at least twenty miles an hour. But now—the memory of interminable fields where Farraday should have been, made him go slow. He felt smothered. He had crossed the line! And that meant he had been *under* Farraday, not over it!

Three miles. John's eyes ached with the attempt to remember every slightest landmark that would recall the spot of shift. Four miles. It seemed as though he were on a light down-grade. His eyes ached. There came a slight dizzy spell. It lasted a second only, but the car was creeping so he shut his eyes tight for an instant. The spell passed. And when he opened his eyes he was on the road to Farraday!

A truck rumbled past and continued on its way to Temple Hills. Many cars took this road every day—and reached their destinations. Why? John stopped the roadster and walked slowly back. A sudden vertigo seized him, and in two steps he was on the "upper level!"

With trembling hands he set a pile of rocks for a marker beside the road. He turned back, and again a dizzy spell for two short steps only; then, on the "lower level" he built another marker.

But why? Why at this spot? That he could answer. It was the point of contact. But why could he shift levels—and these other trucks go on? It wasn't all accident, for he had done it a dozen or more times deliberately. But why?

He went on to town, hooked on the trailer loaded with necessary supplies, then went back slowly. He stopped long enough to whitewash his marker. Twice

he had to back up before the slight vertigo told him he was changing levels. Once on the "upper level" he stopped again to whitewash the marker on this side. But it was a thoughtful John Hayden who completed the trip to the castle and helped the men carry the new supplies into the basement.

As soon as this was accomplished he sought out Dr. Eberhardt.

"Doctor, we've got to work it out! What is the secret?" he asked, and that feeling of being lost crept back to him a bit. He knew now how these lost souls in New Temple Hills had felt when they arrived. They had retraced their steps many times they had said, but never found their way back to the old road.

Dr. Eberhardt drew him into the main hall and pushed him down into one of the two big chairs before the hearth.

"We must think, John," he said. "We must recall every circumstance that we had in common with these others who are here. Every circumstance that is identical on each of our successful crossings. Then we must discover what it was you lacked this afternoon. What was it you lacked, twice, when you had to back up to-night? Something that you had the third time! If we search hard we will find it. If we do not find it the adventure is finished and we must lead our little tribe back as fast as possible!"

For ten minutes there was silence. Not a sound echoed in the huge medieval room except the ticking of a twentieth-century clock on the mantle, and the crackle of the small flame set way back in the recess of the old-fashioned fireplace.

"Those dizzy spells," John said at last, "must play some part."

The professor nodded, puffing studiously at his pipe.

"Yes," he mused, "but mainly I think

that we have to overcome gravity at that point. If our minds are set objectively on the 'upper level' at that point of contact, we come up. If at the moment our minds are on no place or thing connected with the true earth level, the bridge would lift us up to the 'upper level.' Sam Bailey was drunk, undoubtedly; his mind was a blank when he reached the force, and so he mounted. When he retraced his steps along the road, sober, his mind was on the road which was the warped level, binding him here. The two young couples were so intent on each other that they had no thought for their feet, or the road they walked; but once lost on the 'upper level' their minds concentrated on the road.

"The other men probably crossed by the same sort of accident. The first time you crossed you were——"

"Dreaming," John told him positively.

The professor nodded. "And to-day, when you failed, you were——"

"Speeding," John supplied, "and watching the road closely."

"Yes; just as the truck drivers do invariably on a dirt road; just as any careful driver does. That is why we have only a very small group on this side." The professor settled down more comfortably now that he felt they had

solved the problem. "And to-night, John, you were watching for your marker which was on the 'lower level.' You were not thinking of the marker on the 'upper level.' That is why you had to back up twice. Then if I figure right, you got to thinking about the one on the 'upper level,' and——"

"Right," John said, shortly.

"Now," Dr. Eberhardt continued, "I believe that if you and I stood by your 'upper level' marker and concentrated our thoughts on the one on the true surface, a man who walked or drove toward us would cross into our warp, but I may be wrong."

Hayden looked up, excitement shining in his eyes.

"It looks to me, doctor, as if the castle would see us burning some midnight oil, proving it—but I think you're right. And I think that we should not for a long time to come, mention our discovery to the world."

The gray head nodded. "No; not for a long time! And to think I almost had apoplexy when you laughed in my classroom! You made a great discovery, John Hayden. It will shift the line of thought of the entire world before we're through with our calculations. It has made me very happy, and very contented. I feel that my life has not been wasted."

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LOST IN SPACE

by J. Harvey Haggard



From the tubular insulation boxes came several men, grasping powerful wrenches.

YESTERDAY I wouldn't have mentioned it but to-day it doesn't seem to matter, so I'll tell you that I simply abhor that pointed little mustache you acquired while

among the planetary chains of Betel-guese," said Lora Frayson to her husband. She leaned back upon the swinging couch in complete physical relaxation.

Her surroundings denoted the first-class cabin of a space liner. The circu-

lar, double-lensed porthole in the wall allowed a view of dark space, sprinkled with diminutive, unwinking stars.

The artificial gravity, holding their bodies snugly down toward the synthetic magno-tractor in the low hull of the ship, acclaimed that the ship was aspace, as did the acrid "synthetic" smell of the ventilated air, which was being continually reconditioned in compartments close to the engine rooms.

"Furthermore," she continued indolently, "I don't care for the cut of those purple garments, even if most planetees regard them as something swanky, while most of the style flashes on the televiso continue to rave of them."

George Frayson looked down upon the flowing, velvet-soft raiment, a synthetic creation of vitriflex. He inhaled upon the cigarette and leaned against the lower steel support of the couch, looking at his wife with a bit of wonder evident in his face. Yesterday he would have been angered incredibly at her words. He would have stifled impulses which might—at least mentally—have bordered close upon contemplative mayhem, yet to-day her frank avowal of the growing antagonism which existed between them left him utterly unstirred.

A hint of darkness underlay his eyes. Intellectual boredom, inspired by the monotonous days in space, was imprinted in the tiny crow's feet about his broad-set, gray eyes, and evinced by the trembling of the tips of his fingers which held the cigarette.

"It would be," he said, motioning vaguely out toward the vista of space beyond the porthole, "affecting you like that." A dry smile etched his broad lips momentarily, but found no response in the colorless curve of her own listless features.

"At least," she said, "it gives one an opportunity to be utterly frank. It's a relief. And what a relief!"

He lifted his eyebrows, gazed off into

space. One hand he thrust into a pocket in the purple vitriflex folds at his waist. He wasn't jealous of Lora as he once would have been, back upon Terrestrial soil, where mundane eyes sought each lovely contour of her face and body. She was somehow different, lying there, her hair unkempt and stringy, her complexion spoiled by the lack of cosmetic appliance with which she had formerly been so meticulous.

"I agree," he said. "I feel like that, too. Yesterday, I wouldn't have told you, but I may as well be perfectly candid. The appeal which you once had for me seems to have vanished. All of those qualities which were so attractive, so alluring, have become drab and repellant. Any attraction you may have had drawing me toward you is gone."

Lora Frayson nodded, stretched a naked arm over the pillow, and allowed a faded strand of yellow hair to fall across her eyes.

"I knew it all along," she said calmly. "Sensed it, rather. Strange, that we can be so ingenious, all at once. I don't care what you do, George. That's strange, too. I know also that though I have lost my feminine appeal for you, other women have not. The woman painter, for instance, has drawn you especially. I've seen your eyes, and she's looked daringly at you. Don't bother to deny it. Go ahead, George, you are welcome to her. I have a complete lack of care for you or anything material this morning. I know it's not what one would term wifely, but I'm lying abed—not even going to dress. I'll have breakfast served here, when and if I want it. Meanwhile, the sooner you leave, the better I'll like it."

"Great!" cried George, and something within him was faintly surprised at his relief. "I'll be glad to get away." Strange—his impulses this morning. Those sensations which usually lay, almost forgotten, beneath the surface of his ordinary life, now claimed him. He

was no longer ashamed to face those things which might have been repessions, but was inanely jealous of their indulgence now.

"Only be careful," said Lora, gnawing ungracefully at a fruit which she had managed to reach from a near-by table. "Do what you please, George, but later—if there is a later—I'll get what I can out of you."

"We'll see about that!" said George, and as he turned to go she spoke.

"By the way, have they found what happened to our liner yet, and where we are? Has the captain quit stalling, sending out those silly little reassurances to the passengers, and revealed that he knows an inkling as to our fate?"

"How do I know?" demanded George curtly, and slammed the door.

HE walked down a long, white-metal corridor, lined on both sides by doors leading to inner cabins. At each end of the corridor was a debouchure known as a "light-parlor." Here broad port windows illuminated an alcove lined with comfortable chairs and ornamented with potted ferns and shrubs. To the right, the well of a ramp, leading down to the engine quarters, loomed darkly.

For a moment George Frayson paused, his hand resting gently upon his temple. He caught a glimpse of outer space through a porthole beyond the light-parlor. He knew that their space liner, the *Zelathon V*, lay wallowing, almost motionless, within the vast outer emptiness of universal space. It had been very still since that abrupt jerking—that sudden spurt of unbelievable power, which had ripped her from her course beyond Sirius, only two clock-spans since.

George knew that the liner had been suddenly—inexplicably—transported across immense distances. He had a fairly clear idea that the pilot had been bewildered by the sudden shifting, which must have altered the formation

of the constellations with the radiating viewpoint. He had a vague assurance within him that the captain would be able to figure it out and set the prow of the liner right soon enough. But even this unstable confidence was curiously inconsequential. Something else had changed, since yesterday. He felt suddenly free, as though he had been released at last from a long bondage.

He was walking down the corridor now, treading softly, for his weight seemed to be slightly under gravity "norm." Some one, carrying a tennis racket, came hurriedly out and bumped into him. The racket clattered to the floor. He looked into the face of a woman he had seen frequently at the table. She was known as Mrs. Venith and she traveled alone. Her customary reticence toward any but her few intimates seemed to have vanished, for her face beamed.

George Frayson realized, without premeditation, that she possessed a singular beauty. The next thing he knew her lips had found his own. She lay passive for an instant, physically vibrant in his arms. The warmth of the instantaneous embrace was exhilarating. Then she broke away from him and laughed.

"I've been wanting to do that for a long time, George," she cried joyously. "I can call you George, can't I? My name is Myra. I hope you're not indignant."

"Not at all," said George Frayson, recovering her racket from the floor. "Truthfully, I rather enjoyed it." Even then he was amazed at the unprecedented turn events had taken. She had always been so reserved; not at all like this. "I think I ought to join you on deck."

"Do," she demanded at once. "There's no use moping around while the captain discovers the ship, which is what he seems to be trying to do. I think we shall enjoy each other's company."

George knew that something had been changed other than the inexplicable shunting of the *Zelathon V* from the customary astral space lines. He couldn't have explained it, yet he realized that such a thing as his enjoying a set of tennis with the reclusive Mrs. Venith could just not have happened yesterday, while to-day he was accepting it as a matter of course. He did not bother his brain by prolonged contemplation.

Twenty-four hours before Captain Drasden had been interrupted in his inner cabin by a warning buzzer. It came from the head pilot. He cut in a connection.

"There's a curious, widely scattered meteoric path ahead of us, sir," the pilot had reported. "It seems to have tremendous magnetic quality and does not follow any fixed orbit of any sort about any sun or planetary body. Its path seems to be variant."

"I don't think there's anything to worry about," said Captain Drasden, after examining the curiously curved path of the meteor swarm. It twined and writhed like a ribbon of immense proportions in a medium of equally Gargantuan dimensions, dipping finally into the unseen depths of space. In the jell-ray photosensitizers the entire stream was made plainly visible.

The sensitive apparatus was responsive to each infinitesimal mote of dust which followed the stream, as well as to larger meteorite bodies which might have proven dangerous upon collision with the outer double-durelynium hull of the liner. "Our sounding apparatus will make us aware of any of the larger bodies, and we can shunt it off with the repeller thrust. There may be a minor fire-storm, but that shouldn't be serious."

"Very well, sir," said the pilot, and the *Zelathon V* had pointed her blunt ovoid nose in an oblique angle across the great meteor stream. As the captain had

predicted, the tiny particles which contacted the outer hull released their energy in heat, becoming molten hot, and resulting in the phenomenon known among inveterate planetees as "fire-storm." The temperature was kept down and there seemed no imminence of any danger. The catastrophic occurrence came when the passenger liner was lying centrally to the perpendicular drift of meteorites, the meteorward portion of the hull limned by the fire-storm.

THE SPACE SHIP had seemed to jerk. Without appreciable acceleration it gained momentum and speed miraculously. Captain Drasden, who sprang from his cabin and raced down to the pilot room in the prow, had suspected that a large meteor had swung down, square on. The energy would have been transmitted directly to the *Zelathon V* if the repeller thrust caught the blow squarely. The meteor would stop, moveless in space, and the space craft would proceed with its impelled momentum, just as a child's marble may strike upon another, to spin in its place, while its energy and speed is transferred to the struck spheroid.

He was still considering this supposition when they brought the *Zelathon V* to an apparent rest in mid-space. They seemed surrounded by a new universe, so altered were the star patterns. It was almost unimaginable that any sidewise motion in so short a time could have resulted in the complete metamorphosis of the constellations.

"It's an undeniable fact," said the pilot to Captain Drasden, "that the constellations—as we know them—are broken up by the shifting of the viewpoint. That goes on constantly as we cruise from one point to another. This sudden precipitation has stumped us. I've got an idea that we struck a magnetic flow of unusual significance. It's not clearly understood just what causes these magnetic flows."

Terrestrial scientists think that, in the balancement of the universe, a strain occurs at various points. The stress results in the flow of energy from one point to another. If a star burns out, its neighboring bodies are affected by the loss of attractational strain and there's got to be a "give" somewhere to form the readjustment. I think maybe we got into the path of that "give" of energy, and it must have been tremendous. But there's something else that's happened along with it.

"I don't know exactly what it is, but the whole crew seems to be acting strangely."

"Yes?" said the captain coldly, staring at his chief pilot, who stood biting his nails like a ten-year-old schoolboy. The pilot flushed, frowned, then withdrew his hand.

"I had trouble with the habit when a boy," he explained limply, although there was not too much of apology in his manner. "I haven't been bothered with it for years."

"Humph!" grunted Captain Drasden. Without quite realizing that he was obeying a desire which was utterly incongruous, he withdrew an orange from his pocket, bit off an end, and began to suck it obstreperously. Meanwhile he scanned the maps and charts in the control room, not heeding the syrupy drippings.

The pilot's observations, disregarded by Captain Drasden, had not been unfounded. Down lower in the storage compartments, which occupied the cellar level of the ovoid *Zelathon V*, the chief purser sat within his office, rattling several bony objects in his freckled hands. He had learned the game of shuffle-gotzle on one of the far-flung astral trips made by the passenger liner. It was a game of chance, and one not looked on with favorable eyes by the officials of the Intraversal Star Lines. Heretofore he had kept the tiny, irregu-

larly carved implements hidden surreptitiously. Now he struck them with a small stick and muttered softly, reading them each time as they fell.

He looked up and his reddish-brown eyes widened. A glow-hurler type of lethal weapon stared him in the face, training in the region of the mole on his chin. Hanging over the weapon were the elongated features of Lieutenant Whiten, who had charge of the engine crew. His gray dungarees were pulled angularly across his hips. There was no denying the dangerous glint in the keen eyes which sparkled from the lean, bloodless features.

"I've always supposed," said Lieutenant Whiten, "that you may have carried most of the ship's currency here in your safe. Most of the people think it's in the ship's stronghold."

"Why—why!" sputtered the bewildered purser. "Wha-what's got into you, Tad Whiten? How'd you know—or guess—"

"So it is," snapped Whiten coldly, through closed teeth. "Do you think I'm nuts, Ganmetz? There's more there than I could make on a thousand star cruises. Open it up, and I'm talking straight goods, or I'll blow you to cinders as quick as a snap of your eyelid. I've always wanted to do this, and thought of it, and now—"

"D-don't shoot!" quavered Purser Ganmetz, his paralyzed hands reaching for the heavy metal door of his wall safe. "Heavens, Whiten, they'll space-bloat you for this, when they find—" Fear came into his pinkish features at the sudden thought.

The lean face of the man who stood behind him set rigidly with an evil smirk as he watched the purser unlock the combination which consisted of a set of shrill sound waves spoken into a sensitive ear-phone attachment. He did not intend that the other should live to tell of the rifling of the secret strong box.

UP in the more lavishly furnished stateroom apartments a woman stood before an easel. Upon the canvas was a scene of the firmament of outer space which caught at hidden emotions within the hearts of all the Earthborn men who had witnessed it. The woman who stood before the painting was as attractive in her own exquisite way. Her chin was tiny, impetuous. Over the smooth, white sweep of her forehead cascaded hair of burnished copper. Her figure might have been modeled by the exquisite touch of a master sculptor. She was clad in diaphanous material which clung cloyingly about her.

Beyond her was a swinging couch, overspread with rich silks. A small dog, with a slimly pointed head and slender, unstable legs, came running toward his mistress as she gazed wordlessly upon her creation. He barked a jubilant canine expression of his spoiled little spark of life. He was of a species known as the Jovian toy spaniel although his breed had originated upon Earth. It was not his fault that whimsical human breeders had crossbred his ancestors to produce the astonishing hue of mottled mouse-gray hair, accentuated by a radiant spray of whiskers which gave a wistful expression to his doggy countenance.

Jupe was a very conceited little dog. Well he might be, for he lay for hours at a time beside the trim feet of the renowned woman whose reproductions of outer space bore the scrawled signature of Rasvna Thoya.

He came up before her silvery pump with a final high-pitched squeal of exuberance. Suddenly the beautiful face of the painter became ravished with some inner revolting perturbation. She cursed manfully, struck the canvas to the floor, and kicked the tiny dog, flinging him across the room to strike upon the metal wall. The toy spaniel slumped quivering to the floor, emitting shrill cries of terror. When his

mistress approached he cowered under the bed, but she no longer thought of him.

Perhaps of all the passengers aboard the ill-fated *Zelathon V*, Rasvna Thoya underwent least change. She was not young, although she attained the intriguing, more fleshy charm of a woman who combines the insidious lure of insatiated experience with the ageless attraction of women of her kind. She had always been a creature of her own whims, utterly regardless of others.

Now she seemed intent in the indulgence of some momentary contemplation. She crossed to another cabin and knocked lightly upon the door. Receiving no immediate answer, she drew her sinuous body up like a crouching pantheress and struck viciously upon it. It slid aside, after the manner of the inner doors of an air liner.

A man stood before her, watching her. She flung herself toward him.

"John!" she cried. "I want you, John, more than ever."

The man was not tall, nor heavily structured. He stood watching her approach unemotionally.

"Rasvna," he said quite abruptly, "I've always said that you were cold, ruthless. You've left a trail of disrupted happiness behind you. You've destroyed more than your inhuman talent can ever atone. I've never been able to resist you—until now—"

He reached to a near-by stand, picked up a weapon, and coolly shot her through the heart.

GEORGE FRAYSON fought a stream of vagrant recollections which wandered from the abysmal corners of his brain. He sought to interest himself in the woman across the table from him, and suddenly found her exceedingly vapid and uninteresting. She was leaning toward him now, her eyes aglow and unnaturally wide. They seemed almost bestial and primeval. His eyes sought

her pale, flat lips, and he shuddered. Something was being thrust from his being, expelled tenuously, as the effects of intoxication are expelled. He suddenly recalled the beauty of his wife Lora as she had been when he had first met her and the contrast with the woman before him was startling.

There were other people sitting there at the various tables, some of them munching the concentrate taste tablets. He had given them little attention, but suddenly he noticed their flushed features, their wild demeanor. He could hear their snatches of conversation.

"Lost," came a wild voice. "Lost in space! We may never see Earth again. But we'll find some place to live, some place among the planets or stars. What difference can anything mean now?"

What difference! George suddenly sat upright. His head throbbed. He was thinking of the Earth-Satellite Mining Co., of which he was vice president. Never to see it again! Never to gaze across the lunar landscape where thermo-pyramids huddled over the mining machinery. Never to see the Terrestrial cities teeming with millions of little individuals, each hurrying about to meet his own problems.

Something frightful had entered his mind. A wave of clarity swept his being. What was it that had frightened him? Something terrible! His squarely cut jaw thrust forward. His strong features were grave. Mrs. Venith was babbling incoherently as she sipped the colorless "taste exciter." George's lay untouched. His fist was clenched on the table edge.

Lora! Oh, in the name of Heaven, what had she said? That she didn't care what he did! Suddenly it was all horrible to George Frayson. He understood abruptly that some abnormal mental lassitude had clutched upon the inmates of the space liner, *Zelathon V*. Something, induced by the feeling that

they were irretrievably lost, had caused this dull lethargy.

He sprang to his feet, unheeding of the cries of the woman. Now he heard excited voices. Faintly there came to his ears the howling of a dog. It was that sound, that mournful wailing of a canine whose senses somehow are aware that its master or mistress has passed into the great beyond, escaping the bounds of its limited perceptive faculties, which brought George Frayson back to normalcy. He saw men moving discordantly, heard shrill voices.

"The painter," came the tones rapidly. "Yes, Rasvna Thoya. She's dead! Shot dead, in the apartment of——"

THE DINING ROOM was distorted, not by any sudden development, but by the coagulating thoughts of a man who has cast aside willfully some tenacious drug which clings to his innermost brain recesses. He saw a man laughing like an idiot below the glow of the uniflow illuminators and gibbering of the recent death. He saw an aged woman who was drinking herself into a sodden stupor. And a child, wailing at her side. There were others pacing the floor with dazed wondering expressions upon their faces.

What had happened? Something had distorted their inner characteristics. George walked swiftly past the arched aperture. A moment later he was treading a curving cat-way that made the exterior hull of the *Zelathon V* a partial support. Occasional portholes yawned from the hull side.

He paused once, and stared out into the distances of an unknown abyss. The stars wavered drunkenly, as is the internal illusion of a space liner which wavers and rotates erratically. George wondered how long he had been this way, how long the space ship had stood stalled. Queer, but his memory was almost a blank. Had it been days, or weeks? And he thought of Lora. But

no, it couldn't have been so awful long. He began to run.

He was climbing the rampway giving, upon a light-parlor of the upper corridor when he heard the dog again. Its wailing stopped abruptly—there came a squeal of terror, followed by shrill yaps of fright. A man was cursing it. He heard steps, running across the metal flooring rapidly.

"Damn you!" came the hoarse tones. "Will you stop that ungodly yelping! I'll fix you, you——"

"Leave the dog alone!"

That was his own voice speaking. George stared across at a burly individual whose features were sloping and brutal, strangely like those of early cavemen. The man must have been a member of the crew; that was evidenced by the tattered remnants of his gray garb. Now he was almost naked.

His eyes glittered greenishly. Little sanity left here.

"What in hell!" he demanded. "The pesky pooch has been going from one port window to another. Howling at one, and then at the other! He comes through here like a bat outa Pluto and I'm going to choke the living gizzard out of 'im. Who's going to stop me?"

The big man's mind was dazed. He turned to confront George as if only lately aware of his presence. Now he glowered. Insane rage mantled his slanting countenance. Behind him, through the artificial fern foliage, George could see the slender dog standing up on a leather couch before a broad port disk which gave a vista of the infinite panorama of space. He was gazing into the depths—and howling!

"You'll leave the dog alone!" asserted George, for something had stirred within him. He felt a vague kinship for the ungainly toy canine, as if it, in common with himself, possessed some slender thread of natural functioning here within the chaos. The burly man

sprang, snarling and baring slaverling fangs like a tiger.

George evaded the grasping hand, but the nails cut his cheek painfully. His eyes alighted on a stool, just within the illuminated ramparts of the light-parlor. He dodged, seized the stool, and swung it high. As the blaspheming space sailor whirled and came in again, he brought the metal object down squarely into the oncoming demoniacal features. The clutching hands relaxed, and the man slid lifelessly to the floor, his head crushed and spouting blood.

The dog howled. George saw it scurrying now, leaping down from the couch, running past his feet. Its scampering legs carried it down the corridor to the opposite light-parlor. He could see the windows, with the star fields shifting. Slowly, but shifting. Was the ship moving, or floundering?

GEORGE stumbled on. Abruptly he paused, for a low moan had come to his ears. He moved uncertainly toward a closed door, partially obscured by a potted vine, tried it, and it slipped aside.

Within the small cubby lay the body of a man. The blur of the gray-and-gold uniform caught his eye. Then George dragged the person out into the light. It was Captain Drasden, and his mouth was partially muffled by a slipping gag. The swelling lips were moving. The wide eyes were eloquent. George needed no urging. Hurriedly he unbound the man, who rubbed his legs and sat upright.

"What's the matter?"

"We were in the control room!" gasped Drasden, wiping his red-rimmed eyes, "when they pounced upon us. Have you seen the pilot and his assistant? They took him, too."

George shook his head. "I mean what's come over everybody?" he demanded. "It—it seems just as though I came out of a bad dream."

"So you've regained your senses

too?" muttered Drasden. "Good! Damned if I know what it is! This shunting of our ship did something besides throwing the vessel into the vast illimitable portions of outer space. It seemed to bring the primeval, more degenerate characteristics to the fore. I experienced them, too. Then there came the mutiny; I think Whiten led it. They've taken the ship, and Heaven knows what they intend to do."

"Then we are irrevocably lost?" demanded George. "Lost in the depths of space?"

Drasden staggered to his feet, holding his head tenderly.

"Yes. Afraid so. You see the entire star field is changed, shifted. We've tried to locate old familiar stars, by their size and spectroscopic emanations! Maybe it's the panic, but I don't think that's entirely what affected us. Heavens, man, there's millions of stars, and so many of them similar that it's a hard deal to compute when you've lost your bearings. My directions became twisted all of a sudden. The magnetic currents are so variable as to be valueless in ascertaining our position. Then—it's impossible to conjecture—but the galaxies are all around us. Perhaps we can find some livable star—to spend our lives out—searching for Earth."

"But first," said George, "we'll have to recapture the controls."

"The whole thing is mad! Every one on ship is mad!" Drasden shrieked.

"Pull yourself together!" snorted George. "There's a way. There's got to be a way! I've a wife on board ship, man! And with those hoodlums loose you—"

Drasden's lips tightened. He seemed to regain possession of himself.

"I realize that. Don't think I don't! I'll need your help," he said, "and that of any of the others who are still sane."

He led down into the lower portions of the *Zelathon V*, into compartments forbidden to any except the crew. The

way led past panels which gave views into the massive engine rooms, where the idle photonors lay in their great sheaths. An opening yawned. Drasden gazed into a mirrored attachment.

"No chance to get the control room. This is a peroscopic attachment," he said. "It's filled with them. I thought so. There's one other chance." His hand gripped George's arm. "We can cut out the controls, but we'll have to hurry. It's no easy job."

"How's that?"

"We'll don space togs and get in between the double outer hull," explained Drasden. "I can get to the controls there."

It was a difficult task. Luckily, they gained access to the locker room and slipped out, dressed in space togs. Time was valuable. Their work with the air seals seemed interminable. The outer shell of the mighty *Zelathon V* was composed of two walls, separated by a vacuum, which served as a double protection against meteors which might occasionally strike from the space side.

When the craft entered gaseous mediums, the inner vacuum served as an insulation. In the glow of their flashes, their bulky space togs, fitted with small atmospheric tank attachments, were cumbersome and ungainly. They might have been oddly shaped monkeys, except for the bursts of conversation that chattered metallically through the head sets of their space suits. The curving white-metal walls were separated scarcely six feet, and braced across by fine tensile rods. They worked their way up past the bulging middle. Drasden knew the way.

Presently the radiophone attachment chuckled the whispered information from Drasden that the controls in the prow were almost directly over them. "No need for caution in speaking, however," continued Drasden. "They can't pick up our tones. We're transmitting through a special alpha-ray wave."

George held the flashes while Drasden worked over a cubicle bulge with a tiny cutting torch. Molten sparks gushed slowly downward. Presently the captain of interplanetary space reached into the interior with a pair of pliers.

"Um—there it is," grunted Drasden through the space phones. "The *Zekathon V* is divided into fifty individual segments. If a meteor were to plow through the hull, automatic locks and sealers would shut off each segment. The control room is one segment. You ought to know that. That's just a means of protection. But there're other ways of sealing the segments individually, and this is one. Now!—that locks the control rooms and shifts the controls to a panel in the lower engine quarters. Good! Whiten and his confederates will find themselves in a virtual prison, even if they do wreck the place."

THEY crawled back down the dark interior, past shaftings which housed the various portholes, with their shadows writhing behind them. Back through the air lock, they made their way toward the engine rooms, where the powerful antipulsor emanations were generated which hurled the ship through space.

Now they paused uncertainly. Coming from the tubular insulation boxes were several men, grasping powerful wrenches. Beyond them the atmosphere tanks, with their complicated gauges and chambers loomed darkly. Drasden tensed, and George stood ready at his side.

The foremost one paused. His greasy hand came to a salute over an equally greasy forehead.

"It was the air, sir," explained the man. "It was getting stale. Some one must have been negligent."

"Good boy, Clinton," said Captain Drasden. "I'm glad that some of you

have still got your heads." Clinton grinned.

Orderly precision reigned. Men went to their posts. One was delegated to stand guard against intrusion, and Drasden took over the substitute controls personally. There was a dominant force to the man, which made itself felt among his inferiors in command. Not for nothing had he been appointed captain of interplanetary space. George Frayson, who understood next to nothing of the machinations of the antipulsor activators, felt out of place.

"Beautiful space to you, George!"

That was Lora, with the cheery greeting so common to space. She looked ineffably lovely, and not a curl of her golden hair was out of place. George sensed the difference. He stood in the doorway of his stateroom.

"Lora," he sobbed, and that was all. She came to meet him.

"Can you ever forgive me?" she wailed. "I don't know what's been the matter with me. I'm sorry, and I'll even try to like your mustache, George darling. But everything is all right now, isn't it? Everything is all right."

"Yes," returned George. "Everything's going to be all right now."

"Then the captain's located our position?" she demanded hopefully, holding him at arm's length. Her eyes glistened.

He shook his head, but seemed to be holding something back.

"We don't know exactly what happened, except that the *Zekathon V* seems to have been hurled a tremendous distance by some sort of magnetic current," he explained. "But as for the captain, he's completely at sea, as to where we are. But we're headed out, and I'm as sure of it as I am that we're standing here, dear."

She looked askance, and he threw his arm about her shoulders, guiding her to the doorway. They stood there, peering down the corridor.

They could see the light-parlor, with its artificial ornaments, and its transparent viewplate of outer space. Before it squatted a very tiny dog. Standing beside the dog was a man, who spoke occasionally into a small apparatus at his side.

"My dear," said George. "I'm afraid our science has charted but a limited portion of our universe. When a space ship travels within the solar system, the general scheme of the celestial universe doesn't change appreciably. But out here—among the stars—you can see that the constellations are lost, because some of the stars are so much farther distant than others. New ones are formed by a slight shifting. It's very bewildering to man, but old Mother Nature has given to one small animal a very special sense which is as mysterious to our mightiest scientists as the reason for all this monstrous creation is mysterious."

The dog was howling again. He seemed very mournful. The light from space traced his fragile limbs, catching strange golden flecks beneath the mousy hair. He seemed very homely, and very diminutive against all that great immensity.

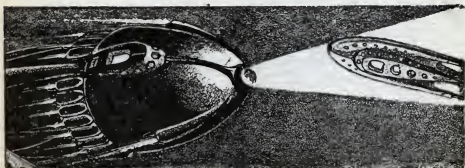
"While the ship was floundering the dog kept running from one port win-

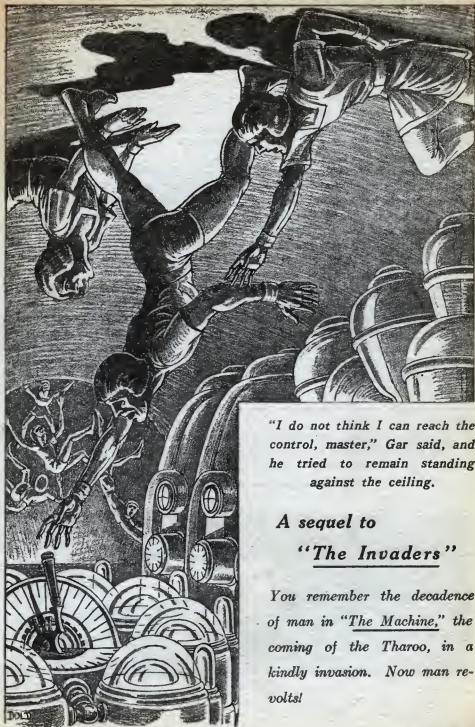
dow to another," continued George. "His mistress was dead, and it suddenly occurred to me that he was a very small scrap of a dog—and the Earth was far away. He was homesick. Yes, darling, there he stands, or squats rather, the real conqueror of space. You can't lose a dog. They've got a sense of orientation which is utterly unexplainable, even by the most complicated of scientific equations. I suspected that, and we checked.

"The space ship was rotating slowly, and the dog kept staying at one side of the ship. We've sighted some near-by stars to hold our cruising directions, and that man standing by the dog is talking directly to Captain Drasden. And somehow old Jupe knows—he's going home!"

Tears came into their eyes and they stood very close together. Somehow the little dog, squatting there forlornly, became very dear and very Terrestrial. He was a small atom, but something called to his being, from the green hill-sides he loved, from a tiny planet which might even lay across the vastnesses of the universe itself.

And somehow they felt it, too, as they stood there. Something within told them that they were going home.





"I do not think I can reach the control, master," Gar said, and he tried to remain standing against the ceiling.

A sequel to

"The Invaders"

You remember the decadence of man in "The Machine," the coming of the Tharoo, in a kindly invasion. Now man revolts!

REBELLION

by Don A. Stuart

BAR-73-R32 looked up slowly from the report he had been reading. His keen gray eyes narrowed slowly in thought. "So that was the reason for the discontinuance of the Type R-31. An excess of initiative on the part of Hol-57." Bar-73-R32 considered the thing carefully. "Exactly the same type scheme I had in mind—nearly fifty years ago—before my type was started."

For nearly an hour Bar sat still, looking unseeingly at the silver-gray metal wall of his laboratory office, or staring sightlessly at the towering Eugenists Bureau, the Tharoo control offices across the garden court.

And at the end of that hour, Bar invented a thing as wonderful as any idea any human ever conceived; he thought of something utterly foreign to the humans the Tharoo masters had bred and selected for nearly one hundred generations. Bar-73-R32 invented—secrecy.

Three thousand years before, the Tharoo had landed on Earth, to find only a semisavage race of humans, indolent, peace-loving, all their wants supplied effortlessly by the growing things about them, a race decadent since the Machine had left Earth a paradise, free of danger, free of disease, three and a half millennia before their coming.

The Tharoo Eugenists had seen before them a great problem, the rebuilding of a once-great race to intelligence once again. With high ideals, the first generation of Tharoo sought to aid mankind back to intelligence by intelligent control of matings.

With deep interest in the problem, the second generation of Tharoo carried it on.

The tenth generation of Tharoo—the twentieth of men—brought a world vastly different than the Landing Colonists had intended. Inevitably the Tharoo had bred a type of humans useful to them.

The Tharoo did not desire any higher intelligence in men. They were very useful as it was. They had, with scientific accuracy, bred out rebellion, thoughts of secrecy, plotting, disobedience.

But—they had required certain human investigators and research students, because it saved them work, and because they needed them and these tasks required a degree of intelligence, a degree of initiative—

Bar-73 was the greatest inventor the human race had produced in twice three thousand years. He was Maun Superintendent of Eugenics, the human director, under the Tharoo Head, of the great homes where humans had been bred with scientific accuracy for three thousand years, far beyond human memory, because even Tharoo records ran no farther back, and initiative had not been a desirable characteristic of Mauns, beyond any different conception possible to the humans of that time.

The idea startled Bar-73. Only the complete soundness of nerve bred into man for three thousand years permitted him to maintain his calm unaltered. Immediately the consequences appeared to him, and immediately he realized a second thing would be needed. Not merely secrecy—but untruth!

Invention. Every word must be an invention. Every act would be a lie, a thing unheard of by humans. But that, he suddenly realized, would aid him. The Tharoo would not doubt him.

Bar was the absolute head of the Eugenics Buildings, in effect. His orders were obeyed, unquestioned; his reports alone reached the Tharoo Head. No discrepancy would be discovered. To a human of an earlier day the thing was inconceivably simple. To Bar—every word, every gesture, every thought must be labored, considered. And—it must go on for years! He paled at the thought.

Slowly he rose and went to the great genealogical charts, where each type and characteristic of every line of the human race was shown.

"Hol-57 saw it—fifty years ago. But four inventions of any importance have been produced this year. The Tharoo work less on science," he muttered softly.

Already man had outstripped his Tharoo master. Bar-73 had made two great inventions that day. "Type R-1 and type S-14—crossed they should produce a research type—a scientist—with the initiative, the ambition and greater intelligence Hol-57 wanted and the Tharoo Head did not think was needed."

Bar paused in astonishment. "If the thing works—as it must—a Maun type more intelligent than the Tharoo!"

For an instant it hung in balance as Bar considered it. Then the subtle stiffness of determination came to him. Slowly he turned away from the charts and examined his card index, made some calculations, and at last wrote laboriously—two order blanks, then two more. Slowly, determinedly, he pushed an annunciator button. A musical hum outside awoke an echo of softly thudding feet.

Gar-247-G-12 came in. G-12 was a type bred for intelligent labor, for difficult manual labor, but yet work requiring intelligence of some degree. His eyes were deep-set and far apart, his head massive, well-formed. And he stood seven feet six in height. He

weighed close to three hundred and fifty pounds. Powerful as a Hercules, yet respectfully attending the six-foot Bar.

"Gar, here are four orders, four mating orders. Will—you see that they are carried out?"

Gar saluted and took the orders. Slowly, Bar-73 sat down, his face somewhat pale.

ELSEWHERE in the building a young girl, of the type known as R-1, surveyed in nervous doubt the slip Gar-247 gave her with a kindly smile.

"It seems your mate has been found at last, Wan," he said gently. "May you be happy with him. Life is a long time, but there will be no more uncertainty. He will be yours, and you his." Gar-247 passed on to deliver the three other notes, his next call being a young man of the designation Jan-94-S-14. And then a girl, Tos-63-S-14 and a man Bar-12-R-1.

These four slips had duplicates somewhere in the files of the Maun Superintendent, but somehow Bar-73 contrived to see that they were lost—for none watched to prevent that—and that certain others appeared, and none would question that, for what Maun would think of falsifying records?

It was nearly a month before Bar called the couple Wan and Jan into his office and talked to them for several hours. They were two of the highest types the Tharoo had permitted, both keen-minded, intelligent, understanding. They listened, and because they were young, scarcely twenty, they were ready to accept the words of the Maun Superintendent, to see perhaps a bit of the vast adventure. Never could they appreciate the full, titanic power of the thing they represented. Bar-73 did not see that. Still he saw the possibility of giving to the Tharoo—the masters—the inventive type he felt was needed.

The two left, were followed by the other couple, and they left, smiling,

somewhat bewildered, but happy in each other. There was something evidently strange about their mating, but they really knew nothing of the records, nor the full processes, only that they were content and that they must do as Bar-73 had told them.

II.

BAR-73 contrived to be present when he was born. On the records, he was Rod-4-R-4. On Bar-73's records, he was Rod-4, without type designation. But on the bed he was very small, and very red, and quite noisy. Wan-14 smiled up at Bar nervously, and Jan grinned down at Rod-4 broadly.

"He's got a powerful-looking chest," said Jan, happily. As a matter of fact, what chest there was was almost hidden behind waving arms and legs, and a jaw let down for greater volume of sound.

"He has," agreed Bar-73, nodding. "His head is broad—unusually broad."

Shortly later, it was not so unusual. A child very like him was born to another couple, likewise officially one thing, and very secretly something quite different in type.

Bar-73 hesitated before he made out four more orders like those first, for he had begun to realize more closely, more fully, that disaster meant not only death to himself, which he did not greatly mind, but a strange and terrible misery to eight innocent humans.

For the first time Bar-73 saw there was more in his great work than mere shifting of nature's forces. They were forces, greater forces than he ever would know, but he had met Jan and Bar-12 and Wan and Tos more intimately than he had ever before met the couples his little slips of paper brought together.

But now he had seen that a second generation must follow. So he made out the other orders and conferred with

four more young, happy, hopeful people. And watched as Rod-4 and Keet-3 grew. Later he began to teach them, and later there were four to teach.

Bar-73 was an old man when he died, and at his recommendation, the Tharoo Head appointed Rod-4-R-4 his successor, an unusually keen-minded young man.

How keen-minded, the Tharoo Head had no idea.

ROD-4 started off with a tremendous advantage. Deception was not his invention, nor secrecy. He knew those already. And Bar-73 had done well in his choosing. Rod-4 was not merely far more intelligent than any human who had lived for the last six thousand years. He was infinitely more inventive.

Bar-73 had been old when Rod-4 was a young man. By the time Rod began to form his own thoughts, Bar was very old, so Rod did not tell him all those new ideas of his. Bar had not been careful to avoid breeding rebellion back into the human strain. When that Tharoo Head vetoed Hol-57's plan fifty years before, he did not tell Hol all his objections. There was rebellion in those strains, a thing neither Hol nor Bar had been able to understand.

Rod did. Rod invented rebellious thoughts, an invention as great as Bar's invention of secrecy. Bar had wished to produce an inventive type that the civilization he knew, the civilization of Tharoo masters and human slaves, might not cease to progress. Rod saw a far better use for inventive talents, and so, because he was a Eugenist as, of course, Bar had been, he realized his training confined him and his inventive ability. But—not too much. He could invent a great many sociological ideas.

Rod-4 mated with Keet-3, and he saw to it that those others of his unique type

mated among themselves, and he saw, too, that they were housed in a section of the city devoted to research students and technicians. He became very friendly with a group of physicists and atomic-engine technicians.

The others of his group, finding their nearest neighbors were chemists, or electronic technicians, became friendly with them and, as children were born, Rod-4 suggested that they, being more than usually intelligent, learn a bit more than the work of their own parents—perhaps some of the learning of their neighbors—

KAHM-1 stood six feet two in height, muscled with the smooth cords of a Hercules, his eyes the color of etched iron set deep and wide in his ruggedly molded head. His head looked large, even on his powerful frame. And there was a peculiar intensity in his gaze that annoyed many and troubled almost all. There were, perhaps, a dozen who enjoyed his company and noticed nothing in his gaze. But that may well have been because they too had a strange intensity of eye.

Sahr-1, Pol-72, Bar-11 and the others, so similar in build, carriage, body and coloring seemed almost brothers. And San-4, Reea-1 and certain other girls were slim, lithe, deceptively strong; their clearly cut, almost classic faces were, perhaps, a bit overwide; their five feet ten made them perhaps a bit tall. But under the close-curved brown hair of each was the same type of intensely keen mind, intensely ambitious, the highest peak of intelligence the human race had ever reached in all its existence.

Kahm-1 had begun to realize his difference and—from his father, Rod-4—his mission, before he was ten. By that time he had proved himself so tremendously beyond any type of Maun which was supposed to exist that even the single-track, uninitiated minds of

the neighboring technicians from whom he had gathered most of his knowledge began to wonder a bit.

Kahm—as did those others of his strange type—became remarkable for his ordinariness only. He made an excellent listener, however, and as an atomic engineer cursed and wrangled over his machines, talking half to himself and half to the quiet, slit-eyed child, Kahm, who listened and watched—and remembered.

He remembered not with the memory of a normal human, but with a mind that was photographic and phonographic. At a glance, he memorized every part and setting of instruments; every word he heard remained forever behind those strangely narrowed, strangely intent etched-iron eyes.

At fifteen Kahm was apprenticed to an electronics technician, a strangely stupid apprentice, who must be told every detail, every movement, and the why of every gesture and connection.

At fifteen San worked herself into a position in the records and documents department. She seemed to accomplish little. She was constantly turning over slowly, listlessly it seemed, the musty pages of the records, glancing casually over the close-typed sheets, and passing on.

Sahr was apprenticed to an atomic engineer, a man who had become a close friend of his father.

They made few friends outside their own group, this score of strange young Mauns. In the great city of rearing salt-white stone, gold, green, silvery metal and gem-hued glass, of sweeping parks, hundreds of thousands of Tharoo and millions of Mauns, they meant little. No one noticed or bothered with a score of young apprentice Mauns.

A score among millions meant so little.

One of them ruled the planet.

A score of them turned the civiliza-

tion that built those cities of stone and metal and glass upside down, and cast it out.

III.

"I AM quoting," said San, smiling, "so don't blame me if the logic is faulty.

"The Report on the Ancient Works, by Shar Nonlu. Year 137 of the Landing:

"From our most accurate estimates it now appears that not less than three thousand four hundred, and not more than three thousand seven hundred years passed between the fall of the ancient civilization of the planet Ardt and the Landing of the Tharoo.

"For what period previous to this the Maun race had lived and developed their civilization it is nearly impossible to say with accuracy. However, some of their own researches indicated a period of civilized life not less than six thousand years before the fall.

"It is evident that the Maun race is indigenous. They evolved from some lower form of life at one time inhabiting this planet, but now extinct. Their progress was steady, but slow, up till a period about two hundred years before the fall, when rapid scientific progress was made, typical of the entry of the Age of Knowledge with any race. Then, when their advancement had gained great momentum, there appears the references to "the Machine." It should be explained that there is a degree of definiteness in the Maun language which makes a differentiation between the symbol "A" and the symbol "the," though translated identically in the Tharoo language. The symbol "the" is highly definite, meaning a particular or unique individual of the class. Thus there was some particular importance attached to this Machine.

"For some reason it was at first regarded with high suspicion, and it is referred to as "the Machine from beyond." Who invented it is not known.

It was, however, capable of thought. For some reason, as unknown as so many things concerning this great, ancient race, the Machine failed, or was destroyed. At any rate, it ceased to function, and as almost the entire basis of their civilization rested on it, the civilization fell.

"He calls that his preliminary discussion," explained San. "The actual report covers many pages. Do you want the rest? I have read it all."

"No," said Kahm. "It is enough. With the other things you have told us, I think we understand. The Machine evidently came from beyond Earth, an intelligent Machine, which aided man for a time, and then left again. I do not understand why, as yet.

"However that may be, it is evident enough that the Tharoo are not natives of this world, and that our race is; that at one time we developed a great civilization quite independent of the Tharoo, though it evidently fell before their coming.

"I think," he said very calmly, quite simply, "we will build it up again. We will first have to convince the Tharoo of our capabilities.

"Pol-72, you are in the Eugenics dispatchment department. Could you get a few M-type workers to aid us, and a few R-type research workers, also?"

Pol-72 smiled softly. "I think so. Call in your servant, Kahm. I will show you something I have learned from certain psychological books. They were written in human tongues before the fall, and even the Tharoo have not translated them."

KAHM PRESSED an annunciator button, and an N-type Maun, a household servant entered quietly. A small man, some five feet five, mentally not well equipped beyond the duties he need know. "He is the best material at hand," said Pol softly.

Pol did something very strange. His ten fingers pointing together toward the man at the end of his outstretched hands, his gray eyes narrowed to slits, he rested his feet firmly—and sighed heavily. His face grew somewhat pale beneath its heavy tan, and a strange, soft luminosity, waveringly violet and scarcely visible, played about the tips of his outstretched fingers and seemed to stream like wavering flamelets from his eyes, from the tip of his nose.

Thirteen barely visible streams of flowing light, they blended, and pushed, and grew, and drove swift as thought toward the small man who, suddenly pale of face, wide-eyed turned to flee in terror. Gently the wavering banners of light touched him and played about his head. He sank very gently to the floor, and sighed once deeply. For perhaps the tenth part of a second the wavering banners curled like soft violet flames about his head, then died.

Panting, exhausted, Pol-72 sank into his chair.

"It is—difficult," he said.

Silently Kahm was kneeling beside the lax figure on the floor. "He is dead," he reported, beckoning Bar-11 to examine him.

Pol-72 smiled slightly as the glow of health returned slowly to his pale cheeks. From his pocket, Bar-11, an expert on Life at the hospital department, drew a small disk, a thin wire, and a tiny case. The disk he dropped on the lax figure's chest, the wire he plugged into the terminal of the case. They listened, quiet. There was no slightest stir of sound.

"He is dead," said Bar-11 softly.

"He is alive," said Pol-72 quietly. "Give me a moment of time—I have practiced little, and there is a great strain. I will explain the thing. In that old book I saw the report of investigations on the radiations of living creatures. Even plants radiate. The radiations of the lowly onion were first

discovered. The radiation of one stimulated another.

"Later a man found he could kill growing yeast by the radiations his own nervous tissue produced. It is released at the nerve-endings, constantly in most. You know most of our race shun us. That is why. Our radiations are very powerful; they are different, and hence somewhat inimical to those not of our type. The radiation is controllable. The books—the Ancient Ones of our race—did not know that. It is so, however. We have each of us learned to diminish that radiation, to control it, lest we attract unwelcome attention.

"I learned to release it, like the stored charge of certain fish which stun their victims by electrical discharges. It is only remotely similar. Largely it is controlled generation.

"It is a strain. But I can cause those radiations to drive out from every nerve-ending on my body at will. The nerve-endings are thickly clustered in nose, and eye, and finger-end. Therefore they are the heaviest radiators. The scientists of the Ancient Ones learned that.

"They excite even the air. They can stun a lower type Maun into insensibility, or coma, even into death I suspect. But he is not dead. See."

Pol-72 pointed but one hand, the bunched fingers like parallel-projector tubes. A thin, scarcely visible light wavered for an instant.

The lax figure quivered suddenly, and jerked upright. "Stay there," said Pol-72. The man froze into immobility at the low, incredibly tense words. "You will forget. You will return to your room and sleep. In five minutes you will wake, having forgotten. Go."

Like an automaton, the man moved.

"When you are ready, Kahm, I will see that whichever ones you wish shall 'die.' Bar-11 will receive their bodies for analysis of the reasons of death."

For some seconds, silence hung in the room. "You can teach us that thing, Pol?" asked Kahm.

Slowly Pol nodded.

"I will start certain things at once," continued Kahm. "And San, you are in the Records department. Have you ever read any Ancient One's writings on the Secret?"

San smiled slowly at Kahm. She shook her head as she answered. "Never, Kahm, you know that. I would have said so, had I. I have read every iota of material in the Documents division, more than any Tharoo, I believe, for as you know, a glance at a page is to know every word and letter on the page, and to know every thought contained in it. The Secret of Gravity was never written down. The Tharoo would not have searched vainly these many, many hundreds of years had it been there to find. Why, I cannot guess. It was not written."

"Perhaps," said Kahm softly, "the Machine brought it, and only the Machine knew it.

"Before we can compete, with our small numbers, and without weapons, against the established might of the Tharoo, we must learn many new things. That, I think, is one.

"The Tharoo put down a rebellion once. They have not forgotten. San has read of that, and knows how it was done. With great ships, the atomic rocket ships. They have weapons too, though they are never seen. The atomic blast. You know it, Sahr, in other uses. Tell us what it is."

"It is a free atomic-generator blast. The wild fury of a rocket is the atomic blast tamed, and modified for use. The thousand-foot streamers of ultimate flame that wash away whole mountains to reach some buried ore are the atomic blast guns controlled, and diminished for useful work.

"There are nearly one hundred

cruiser ships equipped with the atomic-blast guns. Each ship carries fifteen, of tenth aperture. The greatest mining blasts use a ten-thousandth aperture. They use blast guns no larger, for if even a fifth-inch blast gun were used, the flame would be apt to eat entirely through the thin film of the planet which is stable rock. Their range is limited on Earth only by the curvature of the planet. Operations from beyond the stratosphere, while the cruisers can readily attain this height, are impossible—for the atomic blast is destroyed by the one thing in nature which can resist it utterly—the magnetic field of the planet itself in combination with the ionized layer."

Kahm spoke again, softly. "So—we have moved swiftly thus far because the Tharoo have not been annoyed by us. Did they so much as imagine we might be somewhat annoying—which they may well, at any instant—they would not, of course, hesitate a fraction of a second in destroying us, and our families. The life of an atom in an atomic blast is approximately one two-hundred-millionth of a second.

"It is growing late now. We have our work. I must make some hand blasts to-morrow for useful burrowing work."

Silently, the score went out, down the corridor of metal, down the hundred and seventeen stories to the street, thence home, on the moving walks of the city. Twice Pol-72 bowed his massive head, and crossed his arm in salute to lordly Tharoo. Twice a defiant smile touched the thin, firm lips. Pol-72 knew well that radiations of an intensity that merely stunned an N-class Maun would be instantly fatal to the alien Tharoo. Carefully, he controlled his normal radiation, so that the Tharoo scarcely noted his presence.

For, after all, why should he—one among millions?

IV.

KAHM LEARNED something of Pol-72's technique that next day, for it meant another thing. The conservation of those radiations normally squandered by the nervous system meant a strange, vibrant energy that constantly sustained him. Kahm found he needed some three hours' less sleep.

His work had been designed to require a normal man's full time, and ordinarily, Kahm, taking it very easy, fulfilled his tasks in the normal time—and accumulated a good bit of outside data as well. But Kahm, by doing his best, completed what work there was which must be done in less than half the allotted time, yet his fellow workers, interested solely in the work before them, paid little attention, for Kahm was busy throughout the day.

Their work was the repair and maintenance of the various complex electronic apparatus of the city, the televiso sets, the intercity and intracity communications apparatus, the automatic apparatus of the ventilators and air conditioners that maintained the great buildings comfortable to their inhabitants, and the countless thousands of small things that needed attention.

They did not notice Kahm's work, slow, perhaps, and painfully thoughtful. He was working out something entirely new. The Tharoo had invented the atomic blast centuries before they left Thar, their home planet. It had powered them across space, and it had built their cities here. It was a mighty thing. So, because they had never seen any need for it, they had not designed a small-scale apparatus.

Kahm very much wanted a very private laboratory, and privacy for a Maun was not a thing the Tharoo's plans included. There was but one road to privacy—downward, into the solid rock deep beneath the city. When a Tharoo engineer wanted to tunnel, he used an

atomic-blast device weighing some hundreds of tons, and throwing a blast flame capable of destroying several thousand cubic feet of rock a second.

It would have brought down a city, of course.

Kahm, at the end of the day, had a plan worked out for his new device. At the end of a second day, he had built a cubical box some eighteen inches on a side, and the third day saw the completion of the egg-shaped ellipsoid projector. It was a dirty-gray in color, its smooth surface broken in only four places, once by the pistol-grip handle, once for the fifteen-prong connector, once by a tiny jewel that served as a signal—and at one end of the strange thing was a minute pin-prick hole, microscopic in size.

Complete, it weighed some ten pounds. Kahm slipped it into a case and took it with him that night. Four of the Rebels met him at his apartment that night, ate with him, and with him descended to the lowest levels of the building where the clicking, humming mechanism of a city under a single roof hummed softly to the song of an atomic generator.

Tal was the construction engineer of the group. It took him some twenty minutes to completely interpret the maze of conductors and great girders that crisscrossed beneath the floor of this subbasement. Then Kahm was ready. The black cube he set on the floor, the thirty-foot length of cord he plugged into the cube, and his eight-inch ellipsoid projector. He touched a stud momentarily, and the ruby jewel on the projector glowed, and from the microscopic aperture of the miniature blast gun a beam shot out—soft, lam-bent light, prismatic glowings, and tinkling lightnings of some miniature thunderstorm on a miniature stage. The concrete of the wall swirled and writhed in the six-inch cone, boiled slowly, and whirlpooled upward toward the projec-

tor, and vanished in silent sparklings. Thin, blue tongues of hydrogen flame, weirdly cold, as the projector sucked out their heat to aid the destruction, leaped once, then burned steadily and straight.

"It is slow, Kahm," said Tal after a moment.

"It is noiseless," Kahm replied with a faint smile. "I could—and will, later—make it cut a two-foot path at the rate of a foot a second. Then these tiny tinklings become muffled roarings, and the static discharges crackle and snap with power sufficient to fuse a ten-inch bus bar, and the hydrogen gas burns hot instead of cold.

"Marn, you had best watch at the elevator controls. If the cars start to descend beyond subbasement E, touch the controls, and tell the occupants of the car that the engineers are working down there."

MARN went over to a bank of the clicking, busy relays, and watched closely for some seconds. Then he turned his attention again to the workers, only a fraction of his attention being needed to watch the relays. The men stood outlined in dark against a background of pale-blue, cold light. A hole was growing rapidly in the floor.

In twenty minutes, on the low, cable-ridged ceiling of this lowest subbasement, there was a square spot of pale-blue light, wavering and shaken by moving shadows. Marn was alone with the elevator controls. A shaft led down, straight and true, through glassy, iridescent walls. Only the tops of their heads were visible, and slowly these sank into the ten-foot square shaft.

For an instant the blue wavering light died, and Kahm's voice came up. "Marn—Marn—call Doon at his apartment. We will need his work shortly." Marn moved to the communications center and adjusted the controls carefully. Presently a tiny screen lighted with the image of Doon-4.

"Doon-4, if your work is done, Kahm can use it now. He has already completed some seven feet of shaft."

"I will be there presently," said Doon.

It was an hour before he and seven of the others arrived. There was no sign of Kahm now; even the blue light on the ceiling was gone and only the dark, glassy hole remained. But at Marn's call he reappeared presently. In low voices they conferred, and presently the projector, turned down to its tiniest beam, cut ledges in the shaft's rim and drilled holes. From packages Doon and his friends had brought came thin, wonderfully tough metal rods and straps, a collapsible lathework of toughest steels, and a quick-drying cement. An hour more, and a counterbalanced trapdoor had been installed. Then—there was no one in the deepest subbasement.

For twenty feet the shaft angled sharply down steps, glassy-hard, slightly roughened by momentary bursts of the blast. Then it slanted more gently down, and down. The trapdoor was soundproof and now there was a dull, confined roaring, and as a last contingent of the Rebels came on call, bringing more things, a second lead was plugged into the tiny, black cube power plant. A fan whispered to itself in a straight-bored, glass-walled tube that drove sharp and true to the great main ventilator pipe of the building, a half dozen glow tubes showed white on the walls, and dimmed the pale glory of the blast and the foot-long, noisy lightning.

At dawn, the shaft had spiraled down and away nearly a half mile. Kahm did not report to work that day, but Bar-11 reported him ill with an infected wound. The others returned that night, with more apparatus, to a corridor nearly two miles long, smooth-floored, dangerously slippery, and descending constantly to a depth of nearly half a mile!

At dawn they all climbed up a four-mile slope, a full mile upward to the



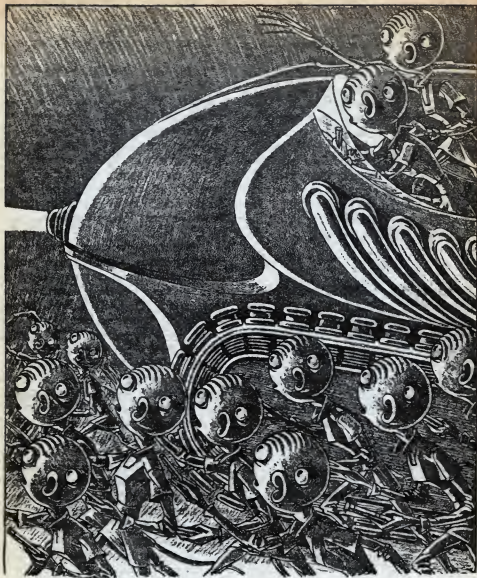
*The Tharoo left their blast running, and retreated.
The blast had washed harmlessly against an invisible
surface!*

lowest subbasement. But the terminus had been reached.

Tal worked the following night, while Kahm slept. When Kahm returned, a tiny car had been constructed, powered by the black cube, running smoothly on the glassy floor, at a sixty-mile speed.

The terminus of the tube had widened to five rooms, lighted, cooled, and serviced by a larger power plant, while a larger fan forced the air from the distant giant ventilator of the city.

The men rested that night. The women worked. Books, documents,



supplies, delicate instruments and chemicals were their contributions. And the following day, Kahm died.

At noon Pol came, unobserved, for those who saw him felt a sudden surge of strange power—and forgot. At one o'clock Bar-11 came, examined the body of Kahm, and took it for investigation into the causes of death. Within a dozen hours, half a dozen S- and R-type

men and women died, strangely, and Bar-11 examined them all for cause of death.

They awoke several hours later, beneath the strange glow of Pol's fingers, in rooms of glassy, iridescent walls. They looked into the strange, terrifying eyes of the Rebel, and they forgot all other life, and did as he instructed them.

Later they were joined by others, and

each night they found more room to work in, and each day they worked with the ellipsoid projector that melted away the rock in pale-blue flames that were cold. And some rock melted away in the transmuters that came, to run out metals, or the elements needed by the miniature food plants that assembled quickly under the swift fingers and machines of the Rebels.

In a month, their position was consolidated. The Rebels died then, one by one, save for some three or four who stayed above to bring the things that might be needed and, most of all, information. But all met once each night.

V.

"Since mathematics evidently constitutes the main road to advancement in physics, I think this is a wise plan," said Kahm. "This machine is closely similar to those developed in the Ancient Times for mathematics, with improvements possible to us. The Ancients had atomic energy and antigravity. We know their secret of atomic energy was the same as ours. Then it is possible to use this same energy as they did."

"Not yet." San smiled. "You haven't done it. What good can it do you if you can?"

"I don't know. Our plans must change with every change in our circumstances."

"You know—I don't know whether this revolution of ours is humanly possible. There is no known defense against the atomic blast. Nothing known can stand before it. How then can we fight? Must we destroy all life on the planet in order to destroy the Tharoo? Must we leave only a dead planet as the goal we have won?"

"How do you hope to make the anti-gravity serve you in this?" asked Pol-72.

"By teaching me physics. The more I know, the more roads open to me for investigation. It is a secret that the

Tharoo never mastered. Only when we have that, which they have not, can we definitely point to an advancement over them."

"Is the point worth the effort?"

"It takes effort. Yes. It takes time. I agree. We have both. We are a company of the dead. We do not exist, save for you, San, and you, Pol-72, and Reea and Bar-11. You four meet few difficulties in reaching us here. The rest of us no longer are, and the Tharoo have lost all interest or record of us. To the dead, infinity is not too distant. We have time. But we haven't knowledge."

This company was not a company of normal humans, but even their super-human patience and determination must have worn down in the time that elapsed there over a mile beneath the surface of the Earth. It was no question of days or of weeks or months. The learning of a thousand years is not to be regained by the experimentation of a day.

In medicine, eugenics, chemistry, atomics, electronics and organization they had been trained. Some members of the company were devoted to making plans—slow, careful plans of the action needed when the time came—others, of the organization and psychological groups, to preparing an educational campaign that the Mauns above would understand when the time came, that they might be quickly, and certainly swung into line behind the Rebels.

The Rebels were laying out their teachings carefully and cautiously. Mankind was to learn one last great lesson. The lesson of rebellion and freedom. Under the Machine, man had taken an advanced course in indolence, with the inevitable disintegration that follows in every case in all history where man has been allowed indolence. When the Machine left man a perfect world, free of danger or work, man took a postgraduate course in the art of utter laziness.

The Tharoo came then, and mankind received such a lesson in labor, work and productivity as the race had never before experienced. Even Mother Nature, in creating the harsh world of evolution, had never equaled the efforts of the Tharoo. It was an excellent course.

Man learned work with a thoroughness never before attained. He not merely learned it, but it was bred into the very race. Nature had achieved advancement by making man desire rest and need food. That was a cross pull that kept the race stepping forward with constancy. He worked harder that he might accumulate enough food to rest—and then Nature tricked him by installing decay bacteria to remove his surplus so he couldn't rest.

The Tharoo did a better job. They simply bred out the desire for indolence. It was an excellent course that the Tharoo conducted.

But they made two mistakes. They taught too well. They taught so well that the pupil excelled the master. And they didn't quite breed out ambition. Which was probably the worst mistake. Because now a new class of teachers had arisen, and they were not only going to teach, but they knew they were going to, and for nearly four long years the Rebels planned, charted, and scheduled their movements. They laid their plans and learned their moves, and calculated the psychological force of their teachings. And the scientists learned slowly those few little dribblings of knowledge that Mother Nature released through her general information bureau, sometimes known as luck, and sometimes as probability.

Cesar said: "All Gaul is divided into three parts," and named the inhabitants. Nature keeps her secrets in a series of cabinets, and all knowledge is divided into parts. There are, unfortunately, more than three, but when once the key which permits entry to one cabinet is found—a whole great field of knowl-

edge is discovered and it is all instantly open to rapid exploration. The discovery of the linkage of magnetic and electric fields was one of the keys. In a decade, a terrific advance was made. The discovery of the electron was the key that let into the cabinet of Atomic Knowledge.

Kahn found the key to a new cabinet. It was called "Gravitic Fields." It took him four years, three months and eleven days to find it. Two hundred and forty-seven years have passed since that particular day. Garnalt's recent experiments just reached what we might call the lower left-hand back corner of that particular cabinet. It seems to be an unusually large one.

TERN-3 was working on some new chemical combinations of the medicines of the Tharoo. Tern had an idea which would have immensely interested the Tharoo. It dealt with the fact that the Tharoo were not a Terrestrial race, despite their long residence on the planet, and that they were not constituted as are humans. Tern-3 had developed a slow-boiling liquid with properties very unpleasant to Tharoo, he believed, yet one which was harmless to humans—unless they stepped directly into the liquid.

Tern's work was proceeding nicely; he was just engaged in pouring exactly 245.8cc of di-nitro-tri-chlortoluene into his faintly green basic solution—when the faintly green basic solution began to spread itself slowly up the side of the beaker, and Tern-3 felt slightly sick. Simultaneously, the solution he was pouring began to float gently away, across the room, toward the right-hand wall.

Tern-3 gurgled gently, and reached for the nearest thing that was firmly anchored. His released beaker floated very gently toward the floor, then stopped, and began to rise slowly. All over his laboratory things were beginning to rise from their places on the tables. There

were groans and whimpers of fear from all over the laboratory group. Tern closed his eyes and held on harder as his feet parted company with the floor. He felt himself falling, faster and faster—the smash would be horrible. He must have fallen at least a mile by now. Minute after minute it went on.

There was a low growling rumble that Tern noticed suddenly, a stiff thudding pound in the silvery metal stand to which he was clinging.

"Kahm!" he called. Not very loud, because he didn't want to open his mouth very widely. He was afraid the result might ruin several of the chemical experiments floating near by. "Kahm—if you're doing that—I hope you are—the rocks are going to give in a minute."

Kahm's voice came back, rather muffled and unhappy. "I was doing that. I'm not now. It's the machine. It's building up the field. I forgot to hold on, I was so interested, and I'm on the ceiling, and can't reach down to the control. The field's stronger here."

"You've ruined several of my mixes," said Tern protestingly. "I'm nearest, I think. I'll try to reach you."

Tern let go. He hit the ceiling with a rather decided bump. The force that was lifting him now was evidently growing stronger momentarily. Most of his mixes were resting on the ceiling now, and a number of sizzling, spitting reactions were taking place. Tern walked rapidly across the ceiling, hopping along, jumping under, through the door, and closing it behind him, for safety. The rocks were groaning very audibly.

He dived across the hallway into Kahm's laboratory. Klay-5 was coming from the opposite direction at the same time, also in answer to Kahm's report. The nearer Tern got to the laboratory, the heavier he felt—in the inverted direction. The organization workers at the opposite end of the long laboratory group were appearing in the corridor

now, semifloating. There was a definite line of demarcation where the field was strong enough to actually invert gravity and hold the people against the ceiling.

In the laboratory, Kahm was on hands and knees now, holding himself away from the ceiling with tremendous effort. The control was nearly ten feet below him.

"Impossible," said Tern softly.

"Call Gar-173-G-8," said Kahm.

Tern's voice rang out.

"Yes, master," responded the tremendous voice of the G-8 man, as he appeared in the corridor at the farthermost end. He stood upright, seven and a half feet tall, his tremendous body muscled to the heaviest work.

"Come here at once—as swiftly as you can," called Kahm. "The switch," he said, turning his head to Tern, "will fall up another notch in about thirty seconds, and the rate of increase will be doubled."

Gar-173 came at his best, a long loping hop that ludicrously carried him into the air in a strange flop that ended with his feet on the ceiling. White-faced, utterly terrified, he came on. His breath was whistling as he reached Tern. "It—it is very wrong," he said. "What must I do?"

Kahm spoke to him. Gar stepped across the door frame and into the strange, inverted room. The giant labored forward, his great bones snapping into closer juncture under the terrific strain. "I do not know that I can reach the control, master," he said doubtfully. He was laboring to remain standing against the ceiling as he reached Kahm's side. The great muscles in his arm and shoulder bulged as he attempted to raise his arm far above his head. At last he touched it. Immediately he heaved it upward, straining, three notches. Neutral. The strange, soft sighing of the atomics silenced. Panting, the giant shoved the

switch several notches farther. The sighing increased as the atomics took up the load of reversing the power.

"That is good," sighed Kahm. The great arm fell heavily to his side, as Gar-173 sank to the ceiling. Slowly the force on the men relaxed. But the deep grumbling of the rocks continued and grew as the weight returned.

"The Tharoo will be warned." Kahm sighed. "That was foolish of me. We must work very swiftly."

In half an hour Tern and his assistants had made the chemical laboratory habitable once more. In an hour they were at work. Some twenty minutes later San came down the tube, then Pol-72, and finally the two others.

"The Tharoo are excited," said Pol-72 mildly.

"They do not know exactly how to reach you, but they have located you very accurately. They think it is a strange natural phenomenon. They are already starting with drilling atomic blasts—they are using the smallest, less the thing which caused the thing be destroyed."

"They will change quickly enough," said Tal, the engineer, "when they detect the cavern by their phonic-sounding apparatus."

"I have found something else of interest," sighed Kahm, looking at his instruments. "What they do, they will do. We cannot move, I fear. If we run a large, free atomic blast for drilling, they will detect it instantly, and cut us off. If we use a small one, they will overtake us. There is really little we can do. Tern and Pol-72 offer our best hope. I must work."

VI.

KAHM HAD the key to Nature's cabinet of secrets then. In three hours he had located the exact discrepancy that he had detected in his first readings of the instruments. Bar-11 had re-

turned to the surface, and was sending through reports. The Tharoo themselves were in the drilling head, watching the progress of the atomic blast, but not making phonic soundings as yet, for their destination was still nearly three quarters of a mile beneath them.

"I thought that field built up too swiftly," said Kahm softly. There were five laboratory technicians of types S and R working with him—building a new piece of apparatus. It was larger than the usual portable atomic generator, but it was evidently of the same general type—with a single modification. And the projector that Kahm himself was working over with such infinite care was not like the projectors usually made for drilling, though it too was ellipsoidal.

Kahm had much of the apparatus made up for other purposes—for the original experiment.

In six hours, therefore, it was ready. Bar-11 reported almost simultaneously that the Tharoo were intensely excited. Phonic soundings had revealed a strange cavern beneath the city, one which had not been there. "And—they report the recent rock shiftings evidently opened a great, slanting fault line extending almost to the surface, and perhaps to the subbasement of building RF-23. Their reports are accurate—if misinterpreted."

Bar-11 dodged into the subbasement of the building designated RF-23, and descended the little self-propelled car some ten minutes before the first Tharoo discovered the trapdoor.

A detachment of twenty G-4 guards was sent down at once. They were equipped with the death tubes given only in emergencies. Pol-72 and Bar-11 met them at the bottom.

Soft, glowing light ringed the twenty fingers of the two men; lambent banners wavered gently toward the group of colossal guardsmen. Silently, gently, the twenty giants slumped to the smooth floor of the corridor.

Ten minutes later they re-ascended

the corridor, two S-type Mauns of the Organization group in their clutches. At the top of the corridor, a group of some thirty Tharoo and a dozen M-type intelligent laborers greeted them.

The thirty Tharoo slumped, clawing at their breasts, as the death tubes glowed momentarily. The M-type Mauns looked on in amazement, and at the gesture of the guard commander, a type G-14 Maun, they preceded the guards down the tube, for they knew, from lifelong teaching, that Mauns of all types and classes must obey the G-types when ordered by them to go.

It was nearly an hour before a group of Tharoo and guards discovered the dead Tharoo at the head of the shaft. Instantly a thousand messages radiated from the subbasement of RF-23. A detachment of thirty G-4 guardsmen under two G-14 officers was at once sent down the shaft.

Half an hour passed. The detachment returned, slowly climbing the tube, with ten S- and R-type Mauns and a few M types. The Tharoo started forward eagerly to question them. Thirty-two death tubes raised as one, and silently the Tharoo fell dead to the floor. Five R-type Maun scientists had been with them and, half rebellious, half understanding the words of the R-type men who had come up with the guards, they went silently down with the guards.

The Tharoo of that day did not know what rebellion was—they had never really pictured it.

Now they could not guess what had caused this strange disappearance and death, when a third detachment was rushed to the scene. They guessed wildly. Rebellion they could not imagine. Some strange natural force, associated with the recent rock shift, and the strange antigravitational force. A terrible gas released far beneath the ground, one which dissolved away every trace of the Mauns, perhaps, in an hour or two, but one which, due to the differ-

ent structure of the Tharoo, merely coagulated their protein flesh, as did a death tube.

The next detachment wore gas masks, and stayed several floors above, watching the G-4 guards and R-type Maun research workers by television. They saw them go down. They saw the R-type Mauns remain at the surface.

The G-4s were gone half an hour—an hour—two hours. Still nothing happened. A larger group of G-4 guards went down, accompanied by several R-type Mauns. Nothing happened. Two hours more, and they did not return. In desperation, the Tharoo sent still another group, and they were equipped with a little truck carrying a complete television apparatus. But suddenly, when they had descended some three miles or more, the television apparatus began to function poorly; interference built up in the wires trailing behind, and recall signals sent to the men below did not reach them at all.

AT LAST, a few brave Tharoo volunteered to descend the great tube. They went armed with a portable atomic blast and they went slowly for they ran that blast every inch of the way, enlarging the tube, but destroying any chance form of life or gas that might be there. One—two—three—three and a half miles they went, their blast following the curved outline of the tube, enlarging it, tending to straighten it.

At three and three quarters miles they stopped, left their blast running, and retreated, terrified up the tube, leaving only a group of Type-R Mauns to investigate. The blast washed harmlessly against an invisible surface!

The pale beam, the tiny, lambent lightnings crackled and sang, twittered against the rock, and swiftly enlarged it. But like a great round plug in the tube, there was a wall that drank up the terrible force of the atomic blast and turned it silently, effortlessly, into utter

darkness. At fullest aperture the beam roared, the rock washed away in great spurting bursts of flaming hydrogen, the lightnings became mighty blasts that shook the very heart of the rock—then at last all was quiet and terror was gone, save where that strange silence held grimly, horribly mysterious. There was no sound, no light, no discharge, only the quiet sucking in of the atomic blast—and silence.

They waited for a report from those Maun investigators they had left, and no report came, and the beam continued on for hour after hour. The Tharoo went down cautiously.

The silence was there. The Maun investigators were gone.

Tharoo scientists went down then. They had to. Only that deadly, inexplicable disappearance of Mauns and the silent, inexplicable death of Tharoo went on.

The second day another group of Tharoo went down to see what had happened to the Tharoo scientists. They lay there—dead. The Mauns were gone again, and the Tharoo this time were not coagulated but simply dead, without reason or understanding. Vitameters, delicate things capable of showing the least trace of life, showed only that every single cell of the body was dead. Not as in ordinary death, where muscles live for hours, and hair cells live for months after death. Everything was dead.

The television would not work here. The silence stopped it somehow. Every form of electrical shielding was tried, and the silence drank in the shielding. They brought down the mightiest atomic blasts they knew, and the silence took them into itself, and the roaring and crackling of the lightnings died.

There was only one way. A chain of Tharoo stood all down that corridor. Whatever else they may have been, the Tharoo had courage, and in the face of

that utterly inexplicable mystery, they stood up to it, to learn its secret.

They retreated hastily though when the silence changed; it grew slowly dark, and the white light of the tubes beyond dimmed slowly. They believed the first expedition to go down had set those tubes in the wall for light, and there was none to contradict them. Their powerful light beams died out into darkness when they touched the spherical wall of the silence.

MAUNS were left there to watch. The Tharoo retreated till they could just see them around the bend of the corridor. For half an hour they waited and nothing happened.

Then—out of the silence came strange, soft banners and flames of violet haze that slowly wound around the heads of the suddenly fleeing Mauns, and the Mauns fell. Hastily the Tharoo retreated farther around the bend. Cautiously a Maun observer poked his head around the corner. The Tharoo watching him saw only the slowly slumping body, the crumpling limbs. He cried out in terror. However, silently, wordlessly, the Maun gathered his limbs under him, like a revived corpse and, still with the strange stiffness of automatic movement, walked around that corner.

The Tharoo did not see him, but he saw his reflection in the glassy wall of the corridor as he joined the stiffly standing group of Mauns and, without a sound or word marched with them into and through the silence.

A Tharoo was sent then—a hopeless cripple who sought death as a relief—to observe, and if possible, report. He observed only the silence hour after hour, and when he attempted to analyze it, he gave only a faint sigh. A cable pulled back his body. The vitameter showed every cell dead, yet no slightest reason for death. The cells were not burned, nor was he injured. They were

apparently as sound as they had been—but they were dead.

That day the silence moved. It expanded slowly; it swallowed the atomic-blast machine, then the corner where the Tharoo had watched. It stopped finally when, as the Tharoo presently observed, it was of such a radius, that the spherical surface of it reached the ground surface directly above the center of the disturbance.

In horror the Tharoo attacked it. They attacked it with their mightiest war blasts, with giant bombs, with atomic engines and conductor beams that sent mighty flaming arcs ten thousand feet into the air—and vanished soundless, lightless, in the silence.

The horror spread. It spread slowly and evenly, engulfing more and more of the city. Mauns and Tharoo alike fled from it.

VII.

KAHM SMILED faintly at the city beyond. He stood at the mouth of the new bore, a straight, round tube fifty feet across. The walls were not glassy and hard, but smooth, cold, gray granite. It came out in the center of the Landing Place. To the right was the Temple of the Landing. It was fitting. The Rebels had landed on Earth's surface within one hundred feet of the spot where the Tharoo had landed.

There was a semicircular clearing, at the moment uninhabited. Beyond, shimmering very, very slightly, lay the great city, towering in scarlet, silver, gold and ebony metal. And at the edge Mauns and Tharoo milled and retreated. There were scores of men working about in the quarter-mile circle within the wavering, nearly invisible dome, patching and filling the great, glassy scars and holes where the mighty atomic bombs had loosed their flaming energies in scintillating, poppy-red flares, sparkling with the typical violet pin points of bursting atoms. The only

sound was a faint tinkling as of crashing fairy goblets.

There were more burstings outside now, near the wall. Above, three great atomic cruisers hung, their great blasts roaring a patch of inconceivable Titan's anger across the sky, to vanish quiet as death into the shimmering curtain.

Outside, that shimmering curtain was a black dome, a dome as dark as platinum-black, since it was utterly absorbent to all light that struck it from the outside, passing it freely, and utterly impenetrable to all light that struck it from the inside.

Kahm turned his eyes toward San, smiling. "Your Organization department was partly wrong. It has been wonderfully successful in gaining time for us. The psychological work was perfect—the Tharoo are utterly mystified. But we cannot advance this dome in this way, continually driving every one away. We need the city. They are destroying it."

"If you advanced much more rapidly, the Tharoo would not have time to save the Mauns. Nor would they have time to fight, which is what we want. That is the new suggestion of the Organizers," replied San.

Kahm nodded slowly. "That was the plan I had in mind. I wanted their approval independently, however. I will start. Also—I think I will destroy those cruisers, for that will aid us in saving the city from ruin."

Kahm returned to the edge of the great tube. A steady, quite powerful wind rose from it. Kahm picked up a small, square case shaped to fit his powerful shoulders and strapped it on. In a moment he was diving down the tube at terrific speed, slowing at the bottom, as he reversed the attraction of gravity. San slowed beside him and landed almost at the same instant. Together, they went to the laboratory where Kahm had worked. It was a mass of powerful machinery grouped about a cube of

gold and blue and black, the heart of their power. There was a slow, steady-moving wheel here, a great time drive that was advancing the wall of the silence inexorably. Kahm made an adjustment. The wheel suddenly accelerated to five times its former pace.

In a few minutes Kahm was back at the surface. The people on the outskirts of the curtain had not noticed the accelerated growth as yet. They only knew it was growing.

Kahm turned his eyes upward. Three great cruisers hung there, dropping bombs and spitting their rays. Kahm raised a little ellipsoidal projector in his hand, looked at it for a moment, then sighted along the thin metal rod at its top, and slowly depressed a button.

THE THAROO saw the black dome leap suddenly upward at one point, an utterly black finger driving with the speed of light toward a cruiser. It barely touched it—and collapsed. For ten seconds the cruiser hung there, her atomic blasts suddenly stilled, the bombs no longer dropping. She hung there, apparently sound. It took some time for the atomically fine dust to spread about enough for them to see at that distance that she was no longer a cruiser, but a dust cloud in the shape of a cruiser. The shape held fairly well for nearly two minutes. Most of them had shifted their gaze, however, before then. The second and third cruisers were slowly expanding. The dust was ultra-microscopic in size, colloidal even in air. It never settled. It floats about Earth to-day, in all probability.

Then they saw the swifter growth of the curtain. It was growing still faster now. The Tharoo promptly preempted all means of transit. Some of the Tharoo were too slow and, with the tens of thousands of Mauns, vanished into the curtain.

The Mauns were greeted by those who had preceded them into the cur-

tain. Safe within, utterly bewildered and lost, finding suddenly that within it was quiet and light and the city was undisturbed. G-type men took charge of the groups, familiar giant figures of solidity and orderliness. They moved in orderly groups to their places, many returning to their homes, now safe within the Dome.

Lordly Tharoo were different. Terrified and fleeing, they were caught by the Dome, struggled for an instant—and burst through to light and freedom to an orderly, cleared place where G-4 men worked and tended and directed. Their courage renewed, they demanded attention.

Instantly, the G-14 guard officers directed them, quite as though they had been Mauns, to go to the central clearing. They were angry. They were insulted by the fact these Mauns did not address them as "Tharoo Master." But they were bewildered. They went.

There were four Mauns there. Four of a type not quite like anything they had seen. Tall and powerful, their faces keenly, intensely intelligent, their eyes gray and disconcertingly intense.

Granth Marld was the first to reach the four.

"Mauns, what is this? Who is responsible for this thing?"

Kahm answered, smiling faintly. "We are, Tharoo. We are taking back our world. This was our world. It shall be our world. The Tharoo can go to Venus, for our records show that once, when you had just landed, you knew that another group of your race had gone to Venus. That was forgotten in the press of things and now you have forgotten it all together.

"We do not intend to kill unnecessarily. You will leave our planet, however."

The Tharoo inclined his head and gazed at the impudent human with all three eyes. "Maun, what imbecility is this? Mauns—Mauns—instructing

Tharoo!" He trembled—his arms shook vaguely in his utter stupefaction, his inability to explain the impossibility of the outrageous idea.

KAHM SMILED slowly. "You will move to Venus. I hope there is no race there already, that your Tharoo race was enslaved. Still—in a way you did help us, and for that we do not take the easiest course—and simply destroy you."

The Tharoo seemed suddenly to quiet down. His excitement passed. "I was upset evidently. That blackness is mystifying from the other side. Interesting. It withstands the atomic blast.

"But you—and your wild ideas. It is evident that you are a defective type, with nervous instability of the hundredth order. Completely beyond reason. You will immediately report to the Tharoo Head. Gar"—he turned to the giant G-14 standing beside him—"take this Maun to the Tharoo Head at once."

The giant smiled down slowly at the Tharoo. He glanced up at Kahm, smiling, too. "No, Tharoo. You do not understand. The Maun race is the stronger. The Tharoo are finished. They are to go," he said slowly.

Kahm spoke: "The Tharoo are finished. This is our world. We are taking it back. You thought me perhaps an R- or S-type? I am not. I am a type created by an R-type Eugenist that the Mauns might win back their world. My type is thirty-seven degrees higher, which makes it seven degrees higher than the Tharoo believed possible, for the Tharoo rate but ninety-five degrees themselves. We are of a much higher type than the Tharoo."

The Tharoo stared at him in amazement. He stared at the guard slowly. "Does the curtain produce this insanity in all who pass through it? Great Maghrath—a Maun type higher than a Tharoo!

"Maun, stay here," he said in final sharp decision. "I must bring others to take care of this."

He turned, and started away determinedly. "Tharoo," called Kahm softly. One of the Tharoo's three eyes focused on Kahm. "Stay," said Kahm gently. The outstretched finger of Kahm's hand glowed very, very faintly. The Tharoo stiffened suddenly. His eye turned wildly in its orbit, his other eyes swung suddenly on Kahm. Tiny, almost invisible streamers of haze hung about the Tharoo's head and shoulders. He stopped. Slowly he turned, and looked up toward Kahm.

"Aye—Maun," he said very faintly. Very slowly he slumped down. The ribbons and streamers left him, as Kahm's hand dropped.

Kahm turned to Pol-72. "We cannot rouse him, for our radiations are deadly to him. Will he rouse of himself?" asked the physicist.

"I think so. But—I fear he will be mindless. The struggle probably blasted his mind completely."

Half an hour later he awoke, mindless, as Pol had said. Stronger streamers of strange luminescence swept from Pol's fingers, and he passed into eternal unconsciousness.

Others came, though, who fought not quite so stubbornly, and awoke again, sane. They looked and, as one after another of their race fell as inevitably as before death, they slowly grasped that man had developed beyond them. When the slightest wavering haze brought their strongest down, and when on one occasion a Tharoo attempted to attack, they saw the forty fingers rise, and from them shot a driving, scintillating stream of solid luminescence that blasted the Tharoo into instant, utter death.

It was a hard lesson. Only the young among them learned it, those young who had been cared for and largely tutored by Maun S and R types, and had already learned from Mauns—

those learned the lesson and remembered it.

In a week the Dome covered Landing City.

VIII.

"YOU HAVE, then, learned to treat with us," said Kahm softly.

There were ten Tharoo there, from the ten greatest cities of the Tharoo still remaining. They were all young. The old Tharoo were aware of that fact. They could not endure it, however.

"Aye, Maun," said a grave representative of the Tharoo. "We must learn what you mean us to do."

"You have in your records the fact that the other ship which accompanied the ship in which your forefathers landed went on to Venus. Never have your two branches met, or joined. I would advise that you seek them. You may be welcome there.

"You may go, and take all your ships. You have learned, I believe, that we could stop any ship leaving, which we did not care to have go. But no Maun—either male or female—of any type or class, age or size may you take with you. Mauns are to be a free race. Do you understand?"

"Aye—in general. But we must work out the plans in detail still."

"That can only be done after a party has been sent to Venus," replied Kahm steadily.

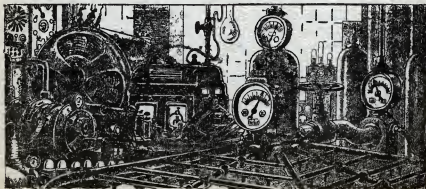
There was a celebration when the last ship left for Venus with the last group of Tharoo. The counsels and representatives still remained. There was still intense enmity. But it was closely bottled up, for only the Mauns were in a position to do anything about it, and they were content.

The Mauns, be it understood, had both the irresistible force and the immovable object, and because they were a strange race, of different types, all contented with the work which they must do and inasmuch as they had been bred with that in view, there was little chance of turning one against each other.

The Tharoo, welcome enough on Venus where their race had, in fighting a desperately savage jungle alone—not with the aid of a tractable race—lost all their science and comfort, nevertheless far preferred the Earth where they were not welcome. They preferred it even more, when they discovered the exact meaning of work. But—what was to be done against the curtain?

Actually it came down to the question: "What was to be done against a more intelligent race?"

For the Tharoo were excellent teachers.



The STAR That Would Not Behave

by R. R. Winterbotham

AN INTRICATE calculating machine whined, clicked, and whirled. A series of figures were stamped on a long ribbon which was torn from the machine and scrutinized by two men.

One of these, veteran of the scientific world, Professor Steven Walleck, wore a puzzled expression. His assistant, young Vance Gibbons, looked to his chief for an explanation. For weeks the two had measured, checked and calculated untiringly in a delicate physical experiment.

"You have checked the vectors?" asked the physicist. "You made sure you used the right constants?"

Vance nodded. "I did," he said.

"Very, very strange," the professor muttered. "Something is wrong. The Earth is receiving too much radiation."

"Could it be cosmic rays?" inquired the young assistant.

Walleck shook his head slowly. "I'm afraid not," he replied. "The wavelengths are those of visible light—that is, they lie between seventy-five millionths and three hundred and seventy-five millionths of a centimeter. Cosmic rays have a much shorter length."

"But at night this radiation should be visible, shouldn't it?"

"That is what puzzles me. The Earth is receiving a measurably greater amount of radiation both on its day side and on its night side and apparently it can only be detected with instruments. There's not a thing that can account for it. Nothing to indicate the

source. But, coming from opposite directions as it does, it seems unlikely that there is a source. It is, more probably, an agitation due to some unusual contortion of the geodesics of space time. Still, I'm not sure that that is right, either."

"There's one thing that might account for the extra radiation on the day side of the planet," remarked Vance.

"The Sun's giving off more light? No, there's not a thing——"

"No, besides that," went on the assistant. "There might be a radiating body that is concealed from view because of the Sun's light. In that case, it might radiate for two or even three months without being observed."

"But how do you account for the radiation in the opposite direction?" asked Walleck.

Vance smiled grimly. "I'll give up."

Professor Walleck once more went over the controls of his calculating machine. Once more he started the intricate mechanism. He was grumbling to himself over the same results when the laboratory door opened.

"Well, well, if it isn't Dr. Crowden!" exclaimed Vance.

The professor put the bothersome figures aside and greeted the visitor. "I thought you had not returned from Faihayi," he said.

"I admit we made a hurried trip home," replied the visitor. "Something important was discovered during our observations of the solar eclipse in the South Seas; something we thought best



Two moons rose in the sky. One, a small, crescent-shaped object; the other, the Moon that had always accompanied Earth.

not to let the world know about as yet."

Professor Walleck cautiously closed the laboratory door.

"Come into my office," he said. "I've been expecting something of the sort."

The three of them went into a small room off the laboratory which served as Walleck's office. After lighting a cigar, Dr. Crowden plunged into his story.

"You probably were a little perplexed," began Dr. Crowden, "by the

newspaper accounts of the observation. The eclipse expedition went to Fairhail especially to obtain new data on the gravitational curve of light rays passing close to the Sun. Yet the correspondent who was with us—who knew very little I might add—was told to wire the report that only routine observations and photographs were made of the Sun and that nothing of importance was learned of the subject we had intended to study. As a matter of fact, our attention during those eight

minutes of total eclipse was turned to something far more important. We had no time for anything else."

"You mean you obtained no observations during the eclipse?" asked Professor Walleck. "I had hoped to use the data; now I must wait for months."

"As far as the eclipse is concerned," asserted Dr. Crowden slowly, "we learned nothing, Steven. But we discovered something else. Something that will command the resources of every scientist on Earth. Another star is approaching the solar system at an enormous rate of speed. It should reach the confines of this system in about three years!"

"Impossible!" snorted the professor of physics. "Or, I might modify it and say it is nearly beyond probability. Do you know what you are saying?"

Dr. Crowden nodded quickly. "It is the end of the world."

"Bosh! I refuse to believe it. It is too improbable."

VANCE leaned forward eagerly. "I do not understand. You yourself have said that the only thing for sure that science can predict in the future is the end of the world."

"Yes, but there are many ways for the end to come. Surely not the most improbable one of the lot. The Sun might cool; the Sun might explode; the Moon eventually will return to the the Earth; the Earth eventually will lengthen its orbit—there are perhaps a dozen other ways for the end to come, any of which undoubtedly will happen if nothing intervenes.

"But for the solar system to end through a collision with another star is too improbable," he went on. "Sir James Jeans, the British physicist, has gone into the subject deeply. He declares that the collision of two stars is comparable with the collision of two

definite specks of dust in Waterloo Station, London!"*

"But Steven," interposed Dr. Crowden, "we saw the approaching star."

Dr. Crowden took from a brief case several sheets of paper on which were crowded an enormous array of figures. "These represent the spectroscopic deductions we have made during the brief interval we were able to observe the star," he explained. "We had not time to compute exactly its speed of approach nor its direction, but we learned enough to suspect that it will, within three years, be inside the limits of the solar system and possibly sweep through the orbits of Pluto, Neptune, Uranus, Jupiter, and maybe Mars and Earth."

Professor Walleck examined the figures.

"I can see that in general it is a star comparable with the Sun in most of its components—slightly larger perhaps. That would mean that such a close approach would be most devastating. It would wreck the solar system. How close would you say it was at this instant?"

"The Doppler effect on the spectroscope can give only its speed of approach. We figured that to be between fifty and sixty miles per second. From its apparent brightness we deduced that it was not far outside the orbit of Pluto, or about forty thousand million miles away."

"Then some evidence of its approach should be apparent at this moment."

"There should be some evidence. That we have not checked. Luckily, Pluto, Neptune, Uranus and Saturn are in near conjunction on the opposite side of the Sun, otherwise any or all might fly out into space. Jupiter, however, is approaching a point where it will be directly in line with the star and the

*Professor Walleck has taken liberties with Sir Jeans' statement. What Jeans said was: "Empty Waterloo Station of everything except six specks of dust, and it is still more crowded with dust than space is with stars."

Sun, Earth, Jupiter and Mars should be in a line at the time of the star's closest approach, about three years hence."

Vance had listened silently to the conversation between the two scientists. At length he could restrain himself no longer.

"What can we do about it?" he asked. "Can we ward off a star?"

Walleck shrugged his shoulders.

"I doubt it," said Dr. Crowden. "From all our tabulations it appears as if we will be right in the line of disturbance when things happen."

"I am still not convinced," said Professor Walleck. "Although the star may be far away, still it is close enough to cause a tremendous amount of disturbance, even in life on Earth. We have noticed nothing— Wait! We have noticed something! Do you suppose, Vance, that our visitor has something to do with the increased radiation we are receiving?"

A MONTH LATER scientists were able to study the phenomena a few minutes after sunset. The public began to notice the spectacle also. It was small, but much brighter than Venus, the evening star.

To hold off panic as long as possible scientists entered into an agreement among themselves to withhold their knowledge of the approaching disaster.

In the first place, no scientist as yet was positive that it was a star. Although spectroscopic examination disclosed it to be of the Sun's type, there were no measurable gravitational effects. Among themselves scientists argued as to whether the visitor from space might not be a huge, hot gaseous orb of much lower density than the Sun, which might not have far-reaching effects on the system.

But there were many arguments against this theory. The presence of iron and other metal vapors in the star

dispelled the notion that it was a light body. On the other hand, the absence of any noticeable force of gravity supported it. The whole problem, as terrific as it seemed, was absorbing in its mystery.

The star was first noted on the twenty-ninth of May. By the end of July inhabitants of the Earth could be deceived no longer. A Canadian amateur astronomer solved the puzzle without scientific help and newspapers belated the news of impending tragedy.

In spite of warnings by scientific men that there was nothing sure about the theory that a star was approaching the solar system—was, in fact, reaching its outermost bounds at that moment—the world was seized in a panic of terror.

Governments tottered, banks failed. The world was thrown into a depression greater than had ever been known before. There was no apparent shortage of food supply as yet, since most crops had been harvested before the news of disaster was spread.

A few scientists, seeking notoriety during the last days of the world, estimated the time left for the Earth's inhabitants at less than a year. At this news any attempt to carry on the world's business was abandoned.

Professor Walleck and Vance were among the few who did not abandon their posts. Foreseeing a panic, the two had pooled their resources and stored provisions and other necessities for the last months. A small power plant was sufficient to run the laboratory and there was fuel enough stored for it to last three years if necessary.

On the night of September first two moons rose in the sky.

The first, the Moon that had accompanied Earth for the past four thousand million years, rose about eight o'clock. About an hour later a small crescent-shaped object poked its head over the horizon. It was pale-green, about one third the size of the real

Moon. Its appearance was followed by another wave of suicides.

The new moon was at once recognized by scientists as the outermost planet of the approaching star, which had been given the name of Chaos.

The planet was called Lachesis, the one of the Greek Fates who assigned man to his doom.

Professor Walleck found in his early observations of the planet a number of mysterious factors. In the first place it had a dark side. Its light side, of course, was turned toward Chaos. But the dark side facing the Sun seemed impossible—yet there it was! The side remained dark in spite of observations that determined that the planet now was closer to the Sun than to Chaos.

In the second place, the planet, although it was between Mars and Earth, neither affected nor was affected by the presence of either planet or of the Sun. It behaved exactly as if it were the only object in its immediate vicinity.

A search with a telescope revealed four other planets, which were given names by newspaper columnists of Clotho, Atropos, Tisiphone and Alecto, after the Fates and Furies of the Greeks and Romans. Lachesis had one moon; Clotho, three; Atropos, the largest planet, nine; Tisiphone, two; and Alecto, one. The moon that circled Lachesis, the planet now near Earth, was scarcely one hundred miles in diameter, but it was distinguishable with the larger telescopes.

The planets all were extremely heavy, as determined by the orbital speed of the moons. They were traveling at a rate that indicated a mass of Chaos slightly higher than that of the Sun. Still no gravitational effects were noticed in any part of the solar system.

THERE WERE no exceptional tides. There were no earthquakes. The Sun was decreasing its spots, as it usually did after passing its eleven-year

peak. Professor Walleck was powerless to explain the phenomena.

Vance, quite by accident, gave him one slight hint. He said one day that the radiation from Chaos on the far side of Earth's orbit was nearly equaled by an excess radiation coming from the Sun's direction. The discovery was made late in the first year of the star's approach.

"This shows," said Professor Walleck, looking over the data observed by Vance, "that our visitor is not imaginary at any rate."

"How do you account for the increased radiation from the Sunward side?" Vance asked.

Although the planet was first observed behind the Sun, during the five months it had swept across the sky until now, it stood out after sunset through the night as a bright star with a disk about a fiftieth as large as the full Moon. Chaos gave off more light than the Moon, however, and night was only as dark as twilight on Earth.

"I can't understand the radiation from the Sun," replied Walleck. "There is no gravitation from the star, yet it seems to draw light from the Sun at a rate of about the same amount that it gives by night."

"The star seems to obey no known laws," said Vance.

Lachesis, the outermost planet of Chaos, swept with astounding rapidity toward the Sun. It diminished in size as it went beyond Earth's orbit and at length it was lost in the Sunlight. Its fate, scientists could not discover, for when it reached the orbit of Mercury the planet vanished. Examination of the Sun showed no answer to the question. The Sun was behaving as before, except for the increased radiation, which seemed to come from that source.

Scientists now eagerly watched the approaching disk of Clotho.

After the passing of Lachesis, Earth

somewhat recovered from its panic. A planet from another star apparently had passed within a few million miles of Earth and nothing had happened. There was a ray of hope that Chaos would carry no harm for the inhabitants of this system. The absence of gravitational effects gave strength to this hope.

The winter was mild, and during the following May, the first year after the star's appearance, New York was swept by a flood from the ocean. The panic returned.

Professor Walleck got in touch with colleagues on the scene. He reported his findings to Vance.

"It is as I suspected," he said.

"A tidal wave?" inquired Vance.

"No. There is still an absence of gravity. The flood was nothing more than the melting of the polar ice caps. Although we may escape annihilation by Chaos, we can't escape the star's heat. We may be burned to a shred."

"That's pleasant."

The increased radiation now was noticeable in everyday weather. In the United States the weather was much warmer than before. A hot summer was in prospect. Alaska reported a climate as mild as the temperate zones. The ice cap vanished before the end of June from beyond view at Icy Cape, Alaska. It did not return for three years.

Reports of floods became frequent as the ice caps melted. As the winter heat—that is, the heat of the northern hemisphere's winter and the southern hemisphere's summer—struck the southern polar cap more floods could be expected.

The governments of the seacoast nations were engaged in moving inhabitants to higher levels. The world again was in a turmoil.

Warned by scientists, the governments also began construction of especially refrigerated homes.

Professor Walleck urged this as he

made his next discovery. He had carefully plotted the course of the star and found that it would sweep inside the orbit of Jupiter, striking the planet and its nine moons on the way out. Chaos would either destroy the solar system at that time or go on. That it could leave without destroying the Sun and Earth was as incomprehensible to Professor Walleck and his associates all over the world as it was at first that such a visitor could come without warning.

When Chaos made its closest approach to Earth, a matter of four hundred million miles, it would give approximately one sixteenth as much heat and light as the Sun. This would not lift the temperature beyond human endurance, except in tropical regions, and it was expected that the air and the ocean would alleviate temperatures there to a certain extent. Mankind, however, was in for an uncomfortable time.

As science continued its speculation on the peculiar behavior of the star which seemingly had no gravity, four more planets and a ring of planetoids were discovered. This made the system exactly analogous to the solar system, especially since the planets were about the same size of those accompanying the Sun. One of the new planets, Megæra, had nine moons and rings like Saturn. All were on the opposite side of Chaos from the Earth, although the two inner planets and Alecto revolved so that they were usually under observation.

AS SOON AS it was learned that the system of Chaos nearly resembled that of the Sun, except in a few minor points, science turned its telescope on Alecto, which was Earth's counterpart.

Here was found an atmosphere capable of sustaining life. A density and mass only slightly below that of Earth and one moon, almost exactly

the size of our own, except that it was revolving closer and in a slightly shorter period than Earth's satellite.

Throughout the following summer the heat was unbearable. There was no longer day and night. When the Sun set, Chaos rose, except during the first months of the year, when the star was on the far side of the Sun. During these months the heat was twice as great by day.

The polar ice caps vanished from Mars and astronomers on Earth for the first time were able to view the dark sides of Venus and Mercury through telescopes. Both were lighted by Chaos.

During the last year of the star's approach, Professor Walleck worked incessantly on his calculations. At length he announced he had solved the mystery and that he needed only one thing to confirm it.

"And that is?" asked Vance.

"The loss of the inner satellite of Jupiter," he announced.

"I do not understand," Vance said.

"Our observations of Chaos have shown us one thing," he replied. "The star gives off light waves. For all we know the star is nothing but light waves. If we could imagine a condensation of light waves into a solar system, almost identical with our own, which gave off light and heat, but which had no gravity—figuratively speaking—we would be imagining the system of Chaos."

"You mean that Chaos is nothing but light?"

"That is what I believe. It is some kind of celestial mirage. What kind I cannot say until my calculations are completed. But I am certain I will be able to explain it in sound scientific terms within a year. I must wait, however, until observation bears out my theory."

"What is it you expect to happen?" asked Vance.

"Light has a definite weight and mass. You know, of course, of the quantum theory, but I am not speaking of theories. I am speaking of facts. A man could be knocked down, a planet moved by a jet of light just as surely as by a jet of water or other force. The pressure of light on a surface—which, in other words, is weight—has been detected and measured by experiment.

"As you know, the inner satellite of Jupiter hangs on a precarious ledge. Any slight perturbation is sufficient to cause it to move within Roche's limit and cause its destruction. This field of tidal break-up would shatter the satellite and cause it to revolve around Jupiter in a fashion similar to the rings of Saturn. The same thing eventually will happen to our Moon.

"I have determined, through intricate calculations, that the pressure of light from Chaos as it passes Jupiter is enough to cause the small moon to plunge over the brink. If nothing else happens, I will know my theory is correct."

The date of the event was fixed as January the third of the following year, just three months away.

Science now was observing Alecto at close range. This small planet had continents, oceans and an atmosphere.

One thing disappointed scientists. Although the planet approached apparently closer than the Moon, not a trace of life was discovered beyond what appeared to be moss growing on its rocky surface. Surely no signs of intelligent life appeared and telescopes large enough to spot an object nine feet in diameter were unable to see so much as a tree.

ONE YEAR AFTER Chaos shattered the inner satellite of Jupiter, Professor Walleck, Dr. Crowden and Vance sat in the laboratory. A small

motion picture camera was projecting the sight of the shattering of Jupiter's moon—the greatest astronomical event in the history of man.

Chaos and its retinue of planets were moving out into space, leaving only an overheated Earth, Jupiter and Mars behind. Jupiter had a thin ring of fragments circling where its moon had once been. A few minor perturbations of the other planets and their satellites were directly traceable, where the most delicate computations could be detected, to the force of light.

The three scientists watched the bright star once more obscure Jupiter and leave her one moon less. The motion picture had been taken through specially prepared glass.

"You promised to tell us something, Steven," Dr. Crowden said after the picture had been shown. "For a year we have waited to hear your theory of the star that would not behave."

Professor Walleck cleared his throat.

"I hardly know where to begin," he declared. "My first clue, as the detective would say—and I am a detective, for I have solved the riddle of the universe—was in the radiation coming from both sides of Earth.

"This radiation did not come except from Chaos and the direction directly opposite. Unfortunately, our first measurements were taken when the Sun was opposite or nearly opposite and we wrongly deduced that these radiations were pulled from the Sun. As a matter of fact, the radiations were not pulled from any place. They were merely traveling toward Chaos." Professor Walleck puffed at his cigar, which had gone out.

"As clear as primeval slime." Dr. Walleck smiled. "And how do you account for this?"

"If you will control your curiosity, my dear friend, I will explain. Years ago a certain man named Einstein con-

ceived a theory involving curved space. Light travels, he said, in great circles. In time a ray of light will bend back on itself.

"Supposing you, Vance, and I should start at this minute in great circles around Earth, each traveling in a different direction. Where would we meet?"

"Right here," said Vance quickly.

"We would meet before that at the antipodes—somewhere in southeastern Indian Ocean, I would judge. If we kept on journeying throughout ages at the same speed we would meet twice each time we rounded the Earth—once here and once at the antipodes." The professor struck a match and relighted his cigar.

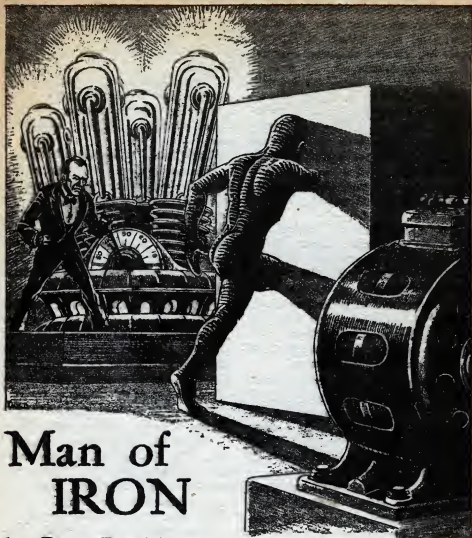
"What we have just seen was the Earth, the Sun and the other planets as they were several million light years ago. I would say three or four hundred million light years, judging from the fact that vegetation had not appeared as yet on the Earth, or Alecto."

"You mean we have reached the antipodes of space?" asked Vance.

"Either the antipodes or the place where the Sun started. If we knew which we could quickly determine the size of space. However, from our measurements of the mass of Chaos and what we know of the Sun we will be able to determine how long ago it was. The Sun loses about four million tons per second in weight. It was that weight that caused the inner satellite of Jupiter to pass over Roche's limit."

"But the radiation from the opposite direction?"

"That," said Professor Walleck, "was the light traveling toward Chaos after an infinitesimal journey through space. Had we a telescope large enough to look at each of those rays, we would have seen at the end of each the back side of Chaos, although we would look in exactly the opposite direction."



Man of IRON

by Ross Rocklynne

DR. MERRA stepped from the laboratory which he maintained in the lonely house atop the hill, into the hall. He looked up and down, with sharp, frowning eyes.

Then he called, in a jagged, penetrating voice: "Lemmans! Come here, if that's you."

From one of the rooms up the hall a thin, sparse-haired head stuck itself.

"Were you calling me, sir?"

"Certainly. Who else?" The voice

took on a mien of preoccupied irritation. "Come here, and quick about it."

He turned back into the laboratory, his brows lowered in a frown. His fingers nervously twisted themselves into knots, and his lips rubbed each other tensely.

The door opened, and Lemmans, his sharp-nosed, tiny-eyed face drawn into its customary niche of nervous fear, stepped within. He waited.

Merra straightened up with a growl.

"You're too slow for a butler," he grumbled. "Come on over here; you'll have to do something for me. And don't bungle it."

Lemmans came to within a foot of Merra, who glared at him with distaste.

"I'll have to have you help me. You know that I fired Reynolds this afternoon, don't you?"

Lemmans bobbed his head. "Yes, sir," he said, meekly.

"You'll take his place for an hour or so to-night. I'll have to scour the country to get another assistant with half his brains. Too bad he was a loafer. Come here and I'll show you what I want you to do."

He straightened abruptly. "Do you know anything about the sciences?" he demanded.

Terror showed itself for an instant in the other man's eyes—eyes that showed terror at any question which might reveal their owner's deficiencies.

"I—I don't know anything, sir," he gasped.

Merra shrugged in exasperation. "You wouldn't," he said biting. "Sit down there. I'll have to give you the fundamentals on which this experiment is based."

Lemmans sat, and Merra towered above him, gnawing impatiently at his lower lip.

"I'm just telling you this so you won't bungle anything. Lord knows it's so simple that no one who's not a ninny could bungle it, but there's no use taking a chance.

"If you were in a room with walls two feet thick—no doors, no windows—could you get out?"

Lemmans' eyes grew larger, and he stuttered. While he hated Merra with a hate few humans ever manage to acquire, he also feared him—and now he feared a trap. Those little traps Merra delighted in setting.

But he had to make a reply. "I could, sir, I could, if——"

"Shut up!" snarled Merra, in a sudden rage. "I suppose you were going to say you could if you had a blow-torch!"

"There isn't anything in the room but you. Get that? Now, could you get out?"

Lemmans sighed imperceptibly. "No—I should say decisively—no." He laughed, jarringly, insecurely.

"Wrong!" sneered Merra. "You're wrong! There's a chance you could. You could walk right through that two-foot wall, and you'd be out."

He fell silent deliberately, watching Lemmans' face coloring.

"You don't believe me," he went on coldly. "But it's true. True," he added, "once in 1,000,000,000,000,000,000,000,000,000,000,000,000,000,000 times—1, with thirty-three ciphers following it.

"So it could be done—even on the first try. You see why?"

He waited so long for an answer that Lemmans had to say something. "I—I don't—I don't——"

"Simple!" snarled Merra. "The molecules of your body, and the molecules of the wall simply do not happen to have paths that meet while you are walking through. It happens when that one chance falls. In other words, two separate bodies can occupy the same space at the same time.

"I can bring about that condition artificially," he snapped to Lemmans. "I can make molecules of my body repellent to those of any substance—and I can occupy the space that substance takes up. I'm going to try the experiment for the first time—now. I've tried it on inanimate objects, but never with myself."

He strode to a raised dais, on which stood four tubes, each half as high as a man. They were dead now, but a lever there before them would bring life to the dynamo in the corner of the room, and it would bring life to the tubes.

Merra pulled down a switch, and

slowly the tubes glowed, sending out vibrations of a texture the nature of which the doctor alone was aware. The whine of the dynamo filled the room.

Merra beckoned Lemmans. Lemmans came, his small soul suddenly clutched in a hand of fear. Some sense he could not name had told him that now his chance was coming—the chance for which he had lain awake at night, planning. And he was afraid that the monster of fear within him would make him fail.

He stood beside Merra.

"THIS small switch," Merra grated in his ear. "It's graduated, see? Zero, ten, twenty, thirty, forty and fifty. When I call any of those numbers, turn the pointer there. That's all you have to do. And don't bungle!"

"Now, stand away from it," he ordered, and going into a corner of the room, he began stripping his clothing from him in jerky, nervous movements.

Lemmans watched him, and his lips suddenly turned up in an inhuman snarl; light was reflected from the tiny slits that were his eyes. He had reason enough in his own mind to act thus, for Merra was the man he hated.

It was ten years since Merra had ingratiated himself in the eyes of Lemmans' parents; ingratiated himself to the extent that they had intrusted their life savings to his financial wisdom in an effort to enable the brood of dollars to propagate its own species.

Not only had Merra confiscated this sum of money, but, through the blind trust they had of him, he had egged them on to converting their property into additional cash; cash which promptly followed the way of its departed brothers.

Subsequently, man-made laws proving their inability to punish him, he had deserted their sinking ship.

The rest had been horror—poverty, starvation, disease, death. First Lem-

mans' mother, and then his father. And young Lemmans was alone in the world, with the burning memory of Merra's treachery to sustain him.

To know that Merra's well-executed swindle had constituted his revenge against Lemmans' own father for a similar, long-forgotten treachery, did not serve to alleviate the awfulness of his hate.

Ten years. Five years to secure this trusted position in Merra's house; the other five years in patient planning—plans to murder Merra with nothing to convict the murderer. And now, some hidden sense told him that his time had arrived. The most perfect and infallible plan of them all.

He watched Merra strip to the skin, force over his muscular body—including face, arms, feet—a pliant, metal-braid suit.

Then the doctor came toward him again. His voice came, strained and cracked: "Don't forget what I said; when I call the numbers."

Merra turned and cast his eyes at the block of pure, untempered iron standing in the middle of the room—a block of iron, six feet cubed. Then he bent his gaze on the great tube that threw its intangible, penetrating vibrations upon his body. A quiver, like a tree shivering under a wintry blast, passed over him. Dr. Merra was very much afraid of the results of the experiment of which he was the vital part.

Then, in a strained, muffled voice—as if the word were torn from him only at the expense of will—he said: "Ten!"

Trembling from the fear of self-betrayal that was still gnawing at him, Lemmans moved the switch so that the pointer centered on ten.

MERRA had been standing tensed, his fists drawn tightly, his heels off the floor. When Lemmans moved the switch, he remained in that position for

a moment, and then he relaxed, with a heavy sigh.

"It feels all right," he gasped jerkily. "I was afraid for a moment—afraid that the air passing through my body would bring effects I didn't—couldn't know about." His voice swelled in joyous excitement. "This will revolutionize things.

"Molecules of air are passing freely through the space between the molecules of my body. They're steering their courses around. And I can breathe. That's the joy of it. I was afraid—

"Twenty! You don't understand how it works, Lemmans?" In the joy of discovering that he could enter this strange world of his own making, his tone, by contrast to his former manner, was quite affable. "The metal of this suit is merralite. From my name, as it's my own alloy. It's all that made this experiment possible. Of course, the vibration emitted from those tubes counts quite a lot, too. Anyway, merralite catches those vibrations, and broadcasts them wholesale to the molecules of which my body is composed, giving them an aura of repulsion to alien molecules.

"Normally when air molecules strike the body, they rebound. That's because each one strikes one of the body. And both bounce away. Now they don't hit—those of the air go between the comparatively vast spaces separating the molecules of my body. That's the reason your hand—except for that single chance—cannot penetrate a wall. Both hand and wall resist each other. I said twenty, Lemmans!"

"I moved it to twenty," Lemmans whispered.

"Mmm. Couldn't feel the change," Merra grunted. "Thirty!"

Lemmans moved the pointer to thirty, and a sigh came from Merra.

"The more intense the vibrations be-

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come," he said, "the less shock is felt by air molecules striking the aura of repulsion. I feel the difference there. Can't breathe so well. Air is passing right through me—almost all of it. But my blood is snatching up some of the oxygen. I don't understand how that can happen, though.

"I won't be able to stay in that block long."

HE WALKED swiftly to the cube of iron, and slowly, with a hesitancy that was weird in its slowness, an outstretched finger approached the element. There was something about this, a quality of unrealness, which did not allow Merra for a moment to believe that his finger would actually penetrate that iron wall.

Lemmans stared, a superstitious chill making itself known in the raising of the hair on the nape of his neck.

A finger had touched the iron; it did not stop. It kept on going into the iron, and the iron did not give way before it.

Merra panted. "It's going through. And there aren't any ill effects!"

He shouted aloud, and plunged his whole arm in—straight in, unflinching. Then both arms; a leg.

A laugh bubbled in his throat. He pulled his arms out, dipped them into the iron again, and again. He waved them about, around and around.

He fell back, panting huskily. "I'm going in altogether. I'll have to be a couple of seconds without air, but that won't hurt."

Experimentally, he poked his arms into the block.

"Forty, Lemmans. I didn't notice it before, but there's a difference from moving my arms in air. Almost like water. Iron of course is denser than air."

Lemmans' face grew pale, for he felt an awe at this latest accomplishment of

man. It weakened his resolve. His hand trembled and broke out into tiny beads of perspiration as it moved the pointer to forty.

As in a daze, he watched Merra easily, confidently, approach the block of iron once more, arms swinging loosely at his sides. He heard Merra's voice, as through the tumbling roar of a Niagara.

"Have to walk straight through, Lemmans. Not enough air. In again, and out again. Fifty!"

Lemmans glared wildly, pantingly, as Merra moved one step nearer. He saw him pause, inflate his giant chest a score of times, striving to assimilate into his blood as much oxygen as possible. And then another step, a step that took but the fraction of a second, but seemed like an eternity to Lemmans.

He must calculate each step, and when Merra had reached the approximate center of that block of iron—

He moved the pointer to fifty, and at the same time, without a pause in his stride, the doctor's face and the whole front of his body passed into the block, the molecules of his body and those of the iron moving freely around each other, never touching, never colliding.

But the doctor would not linger long within the solid; no longer than it takes to walk six feet— One second after he merged with the iron. That was the time.

Lemmans tensed. The roar in his ears grew louder. His fingers trembled on the switch, and with distended eyes and trembling lower lip he saw Merra swallowed up. He was gone. There was no trace of him—as if he had never existed. As if he had never existed!

His eyes grew even wider in terror of the thing he was going to do. Hating Merra as he did, still his puny soul quaked with dread at thought of killing a man. But fiercely, he remembered that this was the man for whom he had lain in wait ten years, and ten years of

hating must not be in vain—all because of an incurageous instant. Merra was immersed, and the iron hemmed him in. Now was the time.

He was inside. He would be crushed, mangled. And no one would find him. How could they? How could they suspect his tomb was that block of iron? So Lemmans' thoughts ran as his hand lay on the switch. Terror and resolve fought each other. And resolve won. The switch began the drop down the graduated scale.

From fifty to forty. To thirty. To twenty. To ten. All in a second. And then—the zero mark!

POOR LEMMANS and his misconceived, ten-year brooded-over revenge! In his ignorant, hate-warped brain he visioned Merra as being encircled by a form-fitting volume of iron. When the switch was thrown to zero, he thought the object of his hate would be crushed to death, or else, with no air supply, smothered to death.

He had not understood the doctor's simple words of explanation beyond the fact that he possessed the means of walking through a solid. Indeed, in his entire life the word "molecule" had beat upon his ears only twice, and in both cases the meaning of the word had escaped him.

His reasoning did not go far. It could not have occurred to him to ask why, if his body molecules permitted the passage of alien ones around them, Merra did not drop through the floor. Only Merra could answer that. But now he would never answer it.

Little did Lemmans dream of what would happen when two solids suddenly became aware that they occupied the same volume of space. Imagination in high degree was lacking in him, and all he could think was that Merra would be crushed to death, leaving no trace of a damning *corpus delicti*.

Iron has its individual density because its molecules have just exactly the right amount of space in which to move. When heat is applied, its molecules attain greater velocities, impact against other molecules more forcefully, travel in paths increasingly longer, and must have a greater volume of space in which to oscillate.

The iron expands; the volume of space the billions of molecules—of which the iron is composed—occupy increases, in order to accommodate the wider range of motion all its tiny pieces of matter require. When cold is applied there is a corresponding tendency toward contraction. The molecules decrease their velocities, and shorten their paths.

The density of a substance decreases as its molecular motion increases—witness a piece of iron subjected to such heat that it becomes a vapor—gas.

Merra was occupying the same space as an identical volume of iron. When Lemmans pushed the graduated switch to zero, all molecular repulsion between the two distinct bodies ceased.

At once, molecular warfare of the fiercest type took place within that space.

Terrific heat, all the worse because of its sudden appearance, was produced. There were billions of extra molecules in a space nature had never intended them to occupy. Each iron molecule received a greater number of collisions per second than the number to which it was normally accustomed.

Result: Its kinetic energy became greater and greater. Each collision imparted to it swifter velocity; and after each collision its terrific flight became longer and longer; and each collision induced in its opponent similar symptoms. The mad, scrambling process went on for perhaps one second, and then there was a tendency toward restless expansion.

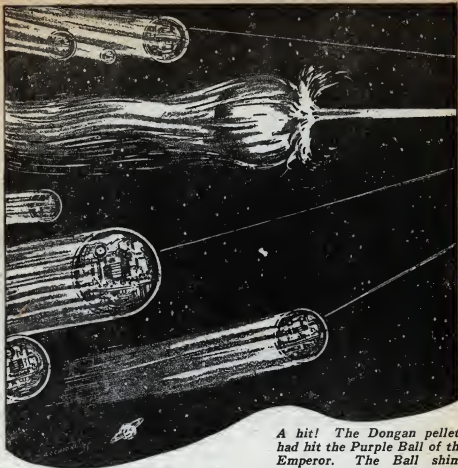
SUDDEN, forceful expansion is but another way of saying explosion. That is what happened to the two hundred sixteen cubic feet of iron in which Merra was immersed. It exploded with an instantaneity that Lemmans found himself unable to appreciate, for the explosion caught him up, transformed him into molecular dust and free electrons. Nor did the explosion stop its destruction with the elimination of the small-souled avenger.

Fortunately, the mansion on the lower floor of which Merra had conducted his experiment was a very lonely place, situated as it was on a hilltop, surrounded with what approximated dense jungle growth. No one else was in the house at that time, so the casualties totaled exactly two—Lemmans and Merra, the former deserving death under man-made laws, the latter under laws the enforcement of which was not enacted through human jurisdiction.

There was a blinding, leaping flame of light—composed of incandescent gases and molecules stripped of their electrons—where that house had stood on the hilltop. This was followed by a roar such as two volcanoes, each consciously striving to outdo the other, might produce. Thereafter, for five minutes, the earth trembled and rocked in the throes of an earthquake made possible by one man's stupidity, and another's genius.

Seismographs on the other side of the world later reported having caught the tremors that undoubtedly shook the whole planet.

When the display was over, the entire hill was gone—shattered into dust. The dust itself was vomited into the upper atmosphere, where, for two months after, it made known its presence by giving mankind the most staggeringly beautiful sunsets and sunrises it had ever witnessed.



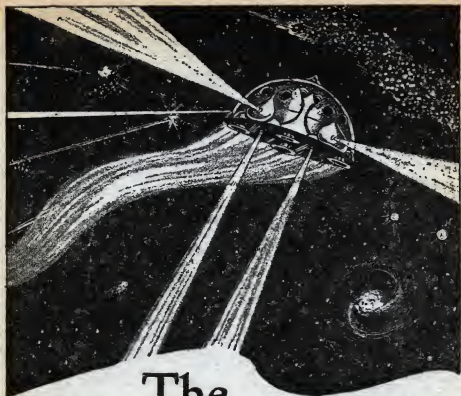
A hit! The Dongan pellets had hit the Purple Ball of the Emperor. The Ball shimmered, unharmed, untouched.

"Redmask of the Outlands"

brought scores of letters to this office asking for a sequel—and here it is with its free cities and its wastelands—and even once again its turmoil and distrust bring back the legends of a great and beloved outlaw.

THE CITY-STATE of Washeen had fallen! The last home of democracy lay shattered and prostrate under the arrogant heel of the Purple Emperor. How could it have been otherwise when Yorrick, City of the Oligarchs, Pisbor, Domain of the Dictator, and Chico, Communist Soviet, as well as a hundred others on the American Continent, had already succumbed to the devastating flame that descended upon them out of the vast wastes of the frozen North?

For centuries they had endured under their diverse forms of government, sufficient each unto itself, mutually hostile and ineradicably suspicious, maintain-



The SON of REDMASK

by Nat Schachner

ing a minimum of commerce, wrapped in special defenses which they fondly believed impregnable to the mightiest weapons that human science could bring to bear. Of such were the Space-Warp that flowed in a solid cessation of light around Yorrick, the inconceivably compact hemisphere of Impermite that inclosed Pisbor, and the shimmering Web-Curtain behind which Chico hazed and danced like a mirage.

Only Washeen in all the Continent lay open to the winds of heaven, unprotected by any defense. In the olden days the reason for this folly had been

plain. The democrats worked with their hands and earned their daily bread by the sweat of their bodies. No machines delved for them into the bowels of the earth, or raised tremendous towers and caste-delineating levels. Their food grew slowly and painfully to fruition in the warm, brown soil, subject to the capricious whims of sun and wind, of rain and snow; the tasteless though nutritious synthetic pellets of the city-states were not for them. Their wants were simple and their luxuries few. They possessed nothing to excite the greed or ambition of their

highly organized, ultra-scientific neighbors.

Yet the democrats were content. Engraved in their hearts were the imperishable words once spoken in a time of drought and despondency: "Better to starve and die like free men, than to accept the assured physical comforts of regimented slaves in the city-states. Better our bodies perish than our souls!"

But to the Purple Emperor nothing was so mean, so insignificant as to escape his insatiable eye. Not Washeen, not the gloomy, impenetrable Outlands themselves. Those dread Outlands in whose interminable expanse of forest the outlaws—having fled from the city-states for numberless reasons—roamed in rude, wild freedom. Once they had been the scourge of the cities, compelling them to cower behind their defenses, raiding the airways with a boldness and piratical valor that made mock of even the most heavily guarded convoys that fled along the channel beams.

That, however, was in the days of Redmask, that strange, mysterious leader of the outlaws whose head was always incased in the flexible, blood-red globe from which he had taken his name. No one had ever seen his features—and lived; no one, that is, except Edward of the Hudsons.

Edward, being a man of honor as well as an Oligarch of Yorrick, had pledged his word to secrecy because of certain inestimable benefits conferred on him by the outlaw chief. But even Edward was dead now, thirty-five years after the event, slain in hopeless defense of his city against the massed might of the Purple Emperor.

Not that it mattered any more. For Redmask, it seemed, was also dead. At least he had disappeared as mysteriously as he had come, and the beleaguered city-states had breathed huge sighs of relief.

For the outlaws, lacking their leader, had quickly sunk back into their pristine disorganized condition, broken up into small futile bands, warring even among themselves. Only the oldsters, who had followed Redmask with blind adoration, shook their whitened, weary heads, and hoped for the return of the hero who had become by now only a myth and a legend.

For no one connected him with a certain jester who, under the immunity of a licensed fool, had wandered from city to city and learned all secrets, and ultimately retired to his native town of Washeen, there to till his plot of ground in obscure industriousness, and marry, and have born to him a stalwart son.

But Edward of the Hudsons, in that last great battle in the submarine tunnels of Yorrick, had called desperately upon him for help through a transmitter whose beam waves were blanked by smothering impulses from the Purple Emperor's battle fleet. Such was the unquestioning faith that Redmask had excited in all men, even in the proudest of the Oligarchs.

THE PURPLE EMPEROR sat ensphered in his great crystal ball and frowned. Over the city of Washeen it hovered, shimmering with faint violet light in the brilliant sunshine. All alone he sat within the orb, surrounded by banked mechanisms within easy reach of his long, predatory fingers. No one dared approach the sacred presence. Not since the days of the Oriental Potentates whom Alexander the Great overthrew, had there been on earth such a remote, enshrouded monarchy.

For the Purple Emperor was inscrutably wise. Man, even in the fifty-sixth century, had not changed much from an earlier era. The veiled figure, the inaccessible lord, the cryptic utterance, always excited an awe and a reverence not ordinarily given to the familiar neighbor, no matter how saintly

or possessed of the wisdom of the angels.

He stared down at the still-smoking city through the univisual crystal. His flat, yellow-parchmented features, suspiciously like those of the Point Barrow Eskimos of an earlier time, smoldered with wrath.

The city of Washeen had cost him dearly. It had been a tiny, unprotected morsel, to be engulfed in one swift swallow, yet five of his invulnerable battle spheres lay shattered on the ground, and two of his best lieutenants were crisped, unrecognizable flesh within their hollows. The fact that several thousand of his Purple Horde mingled their still-smoldering ashes with the twain meant little or nothing. Warriors were cheap.

Nowhere had he encountered such resistance. Not since he had started on his all-conquering career. For years he had planned this coup, alone and solitary in his steamy cave, fed by subterranean fires, beneath the ice pack that overwhelmed the Magnetic Pole. Here he had fashioned and labored and taken all science to be his province.

At last he had harnessed that which he had set out to do. The supernal, almost illimitable forces of the earth's magnetic currents. The currents that concentrated at the Magnetic Pole in their utmost intensity. Fields of force that swarmed to the north from the countless billions of tons of nickel-iron of which the earth's core is fashioned. Fields of force that resulted from the dynamolike axial spin of the planet against the space-time unit once known as the ether. Fields of force that incased the globe in a mighty blanket from the emanations of the sun, from cosmic rays, from all-pervasive light, from influences as yet unknown and undiscoverable.

The Purple Emperor tapped this mighty and inexhaustible reservoir of power, forced it through an intricate

series of induction coils, tubes, power magnets, and spewed it out on an electromagnetic beam wave of inconceivable strength and intensity. The Purple Balls of the battle fleet were spheres of a crystalline synthetic substance called "polarium." Its molecules were closely crowded and could be polarized to any desired degree. That is, each molecule was a tiny magnet with north and south poles, and a graduated current from the beam of force swung them on their infinitesimal axes to predetermined places.

As a result, no other form of energy was needed for velocities limited only by the speed of light, for the motive power of Dongan units, ray projectors, conite disruptors and other terrible engines of destruction. And, according to the degree and incidence of polarization, enemy weapons could be made to pass harmlessly through the open interstices of the patterned molecules, or find an impregnable interlacing through which no matter or ethereal wave could force its way.

Furthermore—and this proved the most potent weapon of all in the hands of the Purple Emperor—magnetic reflectors attached to the battle spheres deflected the inexhaustible force beam, sent it swirling in all its unimaginable might against the special defenses of the city-states. The Impermite hemisphere under which Pisbor sheltered itself lifted bodily into the air and spewed out into space to become a new satellite. The cubed barracks of penetron, a highly magnetic substance, wrenched from the solid earth and followed with all their robotlike population.

THE WEB-CURTAIN of Chico, essentially an electromolecular phenomenon, was shattered like thin, tinkling glass. The Communists put up a desperate, fanatical resistance. Only a few escaped the final slaughter.

Yorrick's Space-Warp, on the other

hand, was a harder nut to crack. For two days and two nights the gravitational-flow machines battled valiantly to keep the impalpable limits intact against the mighty pull of the magnetic beam. It was a losing fight. The ceaseless thrust of power, bending space back to its normal flow, was too much for mere man-made machines.

The Oligarchs, under the leadership of Edward of the Hudsons, retired to the lower level of the workers, determined to sell their lives as dearly as possible. But retribution for centuries of oppression overwhelmed them. The workers revolted in a blaze of remembered wrongs, joined the invading Purple Horde, and led them by secret passageways to the last barricaded chamber. No quarter was asked, none given. The Oligarchs rose to ancient tradition, and died silently, valiantly.

Only one survived the holocaust—Anne of the Hudsons, daughter of Edward. Just before the final inundation of the maddened hordes her father thrust her, struggling and protesting, into a small one-passenger rocket car.

"I won't go without you," she cried. "I want to die with you and the others."

Edward smiled sadly. "There is room only for one, dear. You are young and life is still ahead. As for us"—he looked around the pitifully small, grim circle of his comrades—"we cannot survive our city. We Oligarchs have lived, and therefore must die, according to tradition."

The beleaguered Oligarchs nodded approval. She was a woman; for her there was no disgrace in flight.

But Anne clung to her father passionately. "I am an Oligarch too," she sobbed. "I claim the same privilege."

An overwhelming roar filled the underground chambers with hideous mockery. The Purple Horde, led by revolting workers, had crashed the last sealed defense.

Edward lifted the struggling girl bodily, pushed her into the tiny car, levered the gleaming port into position.

"Head for the Washeen channel," he shouted above the din of approaching battle. "Ask for——"

But it was too late. Anne never knew who it was in Washeen for whom she was to ask. The spearhead of the assault was upon them. The last glimpse she had of her father was his white, anguished face, his open mouth shouting desperately a name she could not hear, and the port had slammed.

The next instant the tiny sealed car shot out of the specially contrived lock, bubbled through the dark waters of the ancient river, and catapulted under the blazing backthrust of its rockets into the warm air of heaven.

Luckily, the Purple Emperor, enthroned as always in his hovering Purple Ball, did not see the tiny fleeing speck. His attention was all on the naked, exposed city beneath. But the Washeen channel was cut off. The little car gyrated aimlessly over the savage sweep of the Outlands, while Anne, unaccustomed to the controls, strove desperately to straighten out her course. A reflected streamer of the magnetic beam caught the tiny vessel, sent it slanting on a long downward thrust toward the Outlands. The dense forest, bitter, impenetrable, filled with lurking wild beasts and wilder men, rushed up to meet the craft. There was a rending crash, and Anne was hurled unconscious against the metal side of the rocket car.

THE PURPLE EMPEROR looked inscrutably down at Washeen again. He pressed a button. The three-dimensional picture of Mogra, his first lieutenant, formed on the inner shell. Thus he could see all his cohorts, but none could see him. The Purple Emperor was only a dreadful voice to his men.

The simulacrum prostrated itself. "Ineffable One—your commands!"

The measured voice boomed in the ears of Mogra, ensconced in a battle sphere. "Have you discovered yet what it was that struck down five of our battleships?"

"No, Ineffable One," Mogra replied, trembling. "Thunderbolts lanced out of nothingness, and behold, they were gone!"

The Purple Emperor pondered. "You are certain it was no hidden weapon from the city itself?"

"Positive, Magnificence. I myself saw the bolts strike from above the craft. I turned my rays on the spot without result. The next lightning blast came from far over to the side. It was then that I ordered full interlocked polarization."

"After five of my ships and two of my best lieutenants were destroyed, Mogra."

The pictured image lifted its eyes blindly.

"You know the reason for that, Magnificence." That tone from the invisible Emperor boded ill for Mogra's continued well-being. "It makes us invulnerable, it is true, but our own weapons cannot fire. They too are interlocked. And the Washeen fools were still fighting back at us from their unprotected city, with their silly popguns."

A long, pregnant silence in which Mogra feared for his very life.

Then: "I wonder what it was," the Emperor mused.

"I think, Magnificence"—the lieutenant advanced hesitantly—"it might have been a rocket ship clothed in the mantle of invisibility. There were rumors, years ago, about an outlaw who termed himself Redmask."

A spasm passed over the flat, yellowish features of the Emperor. But Mogra could not see it. "Redmask is dead these many years," he said harshly,

"and no trace was ever found of his vessel. It was a myth."

"Yes, Magnificence," the simulacrum answered humbly. "Perhaps"—it dared to raise its head again—"we should exterminate this stiff-necked race of fools who earned your righteous wrath."

The Emperor pondered. A subtle smile pulled down the corners of his broad, coarse lips. "No, Mogra. They are fools, but valiant fighters. I need such men to fill the depleted ranks of the Horde. Issue a proclamation, Mogra. All males between the ages of 18 and 45 shall present themselves for service to-morrow morning. It is an honor beyond their deserts."

"Your will is law, Magnificence." A button pressed, and the three-dimensional picture faded into nothingness.

II.

STEPHEN HALLECK was old. His hair was white, and his limbs, though powerful, possessed none of the resiliency of youth. And there was infinite sadness in his eyes as he gazed out upon the ruin and desolation of his beloved city of Washeen. The mantle of inscrutability fell upon him as his gaze lifted to the ominous threat of the alien battle fleet above, and lingered strangely on the huge Purple Ball in which the Emperor sat enthroned, impregnable behind the permanently interlocked polarization of the shining univisual polarium crystal.

For a moment a spark leaped and seared across his face, then it sheathed as he turned to the young man who stood, glowering and resentful, at his side. Once he had been like that, with tawny hair that retreated from bright-blue, ever-roving eyes. Just so had he stood, with easy flowing grace, confident of the wine of life that bubbled in his veins, owning no man to be his master. A clouded regret swept over him. His days were over, except for special

spurts such as—— He roused himself. He must act with speed and decision; he must convince this young hot-head who was his son. Therein were they different. Even in youth, Stephen Halleck had been wise and far-seeing beyond his years.

"So you believe your father to be a coward, eh, Kent?" he asked softly.

Kent Halleck flushed and averted his eyes. A long, red wound seared across his forehead, where a Dongan unit had barely missed. "No, of course not, dad," he answered hastily, too hastily. "But——"

"He disappeared while you and all the other hot-heads fought on against the massed might of the Purple Horde," Stephen finished for him.

"Did you wish us to submit tamely to slavery?" his son retorted hotly. "Even the old men, yes, and the women, too, fought at our sides, bravely, to the last gasp."

Stephen let his eyes drift over the smoking ruins. Once more there was infinite sadness in them. "I warned them," he whispered as if to himself. "I pleaded with them to escape to the Outlands while there was yet time; but they, poor, brave, unthinking, gallant souls, preferred to stay and wage hopeless, foredoomed battle. Now they are dead, most of them. Even as you would have been, my son, had I not dragged you out of the mêlée when I found you unconscious, creased with a Dongan pellet. And to what end?"

Kent drew himself up proudly. "Better death than slavery. And the Horde did not escape unscathed."

Stephen bent inscrutable brows on him. "Your defenders did that?"

Kent looked puzzled. "I don't know, dad," he muttered. "But the fact remains that five of the invading fleet crashed."

"Ah, yes," the old man said cryptically. "But enough of that. Time grows short. To-morrow, according to

the proclamation, you will be impressed for service within the Purple Horde."

"Never!" Kent burst out fiercely. His hand went to the concealed conite disruptor under his tunic. "I shall die first, and dying, take along with me plenty of company."

His father shook his head. "No. It is easier to escape to the Outlands."

"Impossible now," Kent declared. "The airways are guarded; the city is ringed with armed guards."

Stephen smiled. "Come with me, and I will show you."

He led his wondering son warily out of the semiruin in which they had sheltered, out into the little truck farm that backed the house. The old man looked swiftly around. No one was in sight. Death and desolation reigned undisturbed. Overhead, high up, gleaming in the sun with a terrible beauty, shimmered the Purple Ball of the Emperor. But the movements of two despised inhabitants of Washeen meant nothing to his omnipotence.

Kent stared blankly about him. The fruitful plot of ground was thrice familiar to him. He had been born here, reared. "What method of escape can you show me here, father?" he asked.

Stephen bent down without answering. A root of a gnarled and ancient apple tree sprawled out of the earth. Just as it had done since Kent was a child. Was his father suddenly crazy from the misfortunes that had befallen them? He was tugging at the root, this way and that, in a certain methodical pattern.

Then suddenly, something whirled. Before Kent's astounded eyes a broad section of earth, planted vegetables and all, fell away, dropping seemingly into the bowels of the earth. His father's strong grip forced him to leap upon the descending sod. Down, down, then cessation of movement. Dazed, he submitted submissively to Stephen's guiding touch. They moved aside onto

hard-packed earth. Then another whirl, something lifted, and darkness inclosed them. He heard his father fumbling. There was a click, and light flooded the underground chamber.

Kent stared blindly around. He had never known of this huge, smoothly rounded hollow underneath their very house. Then he gasped in astonishment. In the very center of the chamber rested a small flier of peculiar shape. Instead of oval frame or ball, this was a perfect hemisphere. From the flat side huge suction disks protruded.

"Why, father, it's a rocket plane!" he cried in bewilderment. "How in Heaven's name did it get down here? What is this place?"

Stephen smiled quietly. "I had this hide-out built before you were born, my son, just for such emergencies as this."

Hope had flared into Kent's countenance, died down again. He shook his head dully. "It's no use, dad. We could never make it. Once outside, the battle fleet of the Horde would spot us instantly, day or night. They have broad-beam search rays. And they are faster than any flier ever known before."

"Let me show you another trick," the old man said. His veined hand swept over the dull-gleaming surface. A port opened. He disappeared within. The port closed.

A long moment, while Kent waited eagerly, not knowing what to expect. Nothing! He felt a faint tinge of disappointment. The shock of this concealed flier had shaken him a trifle loose from his youthful impatience with the caution of age. Perhaps he had not known his father, after all. He had resented, from boyhood, the placid obscurity of his family lot. Stephen Halleck had never sought office, never busied himself with public affairs. The other citizens of Washeen had looked

with the slightest tincture of contempt upon this returned prodigal who had wandered in alien cities, forsooth, as a licensed jester, as a fool who made artificially merry at the mocking requests of the lords of the city-states.

KENT rubbed his eyes. Evidently the light was fading. For the ship was slowly growing dimmer. But no. The light was as strong as ever. Yet the flier faded and wavered before his very eyes. More and more tenuous it became, until, like a whiff of smoke, it drifted into nothingness. Where the rocket plane had stood was—nothing! Not a cessation of light, not a dark blob, but normal air and light and the walls of the cavern behind, just as if the ship had never existed, as if it had been a mere phantom of his overheated imagination.

He started forward with a cry. "Dad, where are you?"

His hand gripped blindly toward the emptiness where the ship incasing Stephen had been. He jerked back suddenly. As if in answer, wisps had formed in invisible air, grew into faint form. Then, suddenly, the rocket plane was there again, solid and substantial, placid in its astounding return.

The port clicked and Stephen stepped out. Somehow, to his son, there was a majesty, an air of power about the man that he had never noticed before. Kent fell back a bit.

"You can make the ship invisible?" he breathed.

The old man nodded. "A rather simple device," he answered casually. "Supermagnets bend the light waves around the ship in such a way that they meet again on the other side. As a result it cannot be seen, and not even a blank spot shows. As a further result, neither can the plane's crew see outward, but spy instruments keep the ship directly on its course and cause it to swerve automatically from any obsta-

cle. Now do you understand how it will be possible for you to escape?"

Kent took a deep breath. It took time to digest this new phase of his father. Awe crept into his voice. "So it was you," he said slowly, "who with this ship sent so many of the Purple Horde's fleet crashing."

"I am sorry there were not more," the old man answered apologetically. "But after the first surprise was over, the spheres clothed themselves in some new form of impenetrability. My heaviest shots, the conite disruptors, rebounded harmlessly from their hulls."

Kent followed him inside the plane. His head was whirling. "And I thought you a coward!" he whispered to himself.

It did not take long to explain the mechanism of the craft. Kent had received a solid scientific education. But in back of the technical explanations something else was faintly struggling in Kent's mind. A vague memory—a legend he had heard. It was impossible of course, but—

The tour of inspection was over. "And now, my son," Stephen said abruptly, "I wish you to pilot this craft into the Outlands, to a point marked 6-4-8-2 on this vibration screen. The controls will stop automatically, and the craft will drop into a little glade. Unless there have been changes you will find a huge oak tree in the very center. You do thus and so with the exposed root. Wait then until you see a man in green doublet and jerkin."

Kent was still in a bit of a daze, otherwise he would have understood by this time. "But—an outlaw!" he cried. "No democrat has ever had converse or dealings with the escaped scum of the city-states."

Stephen smiled queerly. "No? Then it is time to begin. For the Purple Emperor is lord of the Continent, and only the Outlands are as yet free."

"But the outlaws are notoriously sus-

picious," Kent protested. "They kill first and ask questions afterward."

His father reached into the depths of a capacious chest and brought out something that glittered within the control room like a blood-red bubble. For a long moment he stared at it, and his eyes clouded with thick-struggling memories.

"This, my son," he said at last, extending the blood-red globe of pene-tron, "is now yours. You will wear it before you emerge from the ship into the Outlands." A strange emotion fogged his voice. "No outlaw, old or young, will harm you then."

A strangled cry burst from Kent. Light blazed in his brain. His staring eyes glued to the hollow globe, swerved immediately to his father.

"Redmask! Redmask of the Outlands! You!"

His father, whom he had known all his life; the quiet, inconspicuous democrat, whom even his neighbors held a little in scorn because of his unpretentious life, because of his motley wanderings as a jester in his youth—he the fabulous, nigh legendary outlaw whom all the Outlands held in worshiping adoration, whom all the city-states had feared with a great dread!

"I once was that Redmask," Stephen said quietly. "Until I met your mother. She had no stomach for the wild, rude life of the Outlands, so I returned to Washeen and settled into domesticity. Not, you understand," he went on with swift gesture, "that I have ever regretted. Your mother's love, yourself, were sufficient compensations. But—"

Like an old warhorse of the eighteenth century he snuffed the air, his eyes sparkled and flashed. Then they were mild again. "There is no time to waste. You will start at once. Once in the Outlands you are safe. And if"—he looked hard at his son—"you have in you the qualities I believe you have, perhaps, who knows, you may be able

to stem the ruthless progress of the Purple Emperor."

Kent straightened his shoulders proudly. "You need not fear, father," he said confidently. "I shall never disgrace you, now that I know. But you are coming too, are you not?"

Stephen shook his head. "No. I must remain behind. I am too old for the Outlands, and besides, Washeen needs me. Perhaps I may even be able to prove of some assistance here." He reached down again into the capacious chest and drew forth a queer-looking musical instrument. An instrument of incredible antiquity—the only one of its kind in the world of the fifty-sixth century. A violin!

He fondled its mellow wood with loving touch. He twanged a string. "This, my son, was the jester's sole weapon when he wandered the ways of the city-states. Perhaps once more its tunes will give rise to unthinking laughter and send their coded signals to the Outlands. Seek out Allyn, my old and trusted lieutenant. He will know the signals, should they come. It is too late now to instruct you in their intricacies. Good-by, my son, and God bless you!"

Their hands met in a strong hand-clasp. Kent's eyes blinded with unaccustomed tears. When he could see again, Stephen Halleck was gone. He was alone in the control room. A wave of fervor flowed through his veins. He would show his great father—the man who only now he truly knew—that he was not unworthy.

He set the controls, turned on the invisibility magnets. There was a faint *swooosh*, an acceleration that drove his feet against the solid floor. Nothing else happened. No sight, no sound. The visor screen was a dull-gray blank.

But the red line moved like a fiery snake across the chart, showing his course. Washeen and the battle fleet of the Purple Horde were already far behind.

III.

THERE WAS the faintest of jars. With pounding heart Kent Halleck switched off the invisibility magnets and slid the exit port open.

He was in the Outlands, the interminable reaches which all dwellers in the cities had been taught to shun for their lives. And now he was here, in his father's ship, clothed with the symbol of that authority which his father had once wielded in these dark and dreadful depths. He had not quite digested, quite assimilated that. It is not easy at a moment's notice to change a lifetime's habits of thoughts and attitudes.

He stepped out eagerly, snuffing the clean air. He stared around with a strange compound of inherited confidence and induced distrust. His father had spoken correctly. The locked controls had set him down in the very heart of a tiny glade.

On all sides, as far as the eye could reach, spread the closely woven, dark-shadowed masses of the Outlands. Not a sound, not a murmur, to disturb their gloomy depths. No sign that human beings had ever trod their trackless wastes. None, that is, except for a thin-beaten trail that edged unobtrusively to one side and disappeared abruptly behind dark boles.

And there, in the very center of the clearing, just as his father had described it, was a mighty oak, patriarch of the forest, rearing its proud head to the sky. Beneath, a huge root writhed and twisted like a frozen snake out of the soil.

Kent sprang impetuously to the ground, moved forward eagerly toward that root. An open sesame it was, a rub on Aladdin's lamp, as he had read in ancient legends, to bring him face to face with the outlaws—those who had bowed to his father's rule. He forgot in his excitement to fasten on

his Dongan unit; he forgot even the blood-red globe of authority.

He bent down, caught the woody root in his strong, capable hands. Once this way; two jerks the other way, and——

He lifted his head abruptly. The silence of the primeval woods had been shattered. A girl's voice, ringing, defiant, accustomed to command, yet overlaid with a quivering fear.

"Don't you dare come any closer, worker. Do you know who I am?"

Somewhere within the depths, along the path of the thin trail, a man laughed harshly.

"You bet I know who you are. Anne of the Hudsons, daughter of proud Edward. A blasted Oligarch! Sure I know who you are and all your accursed tribe of Yorrick. For centuries you ground us down, treated us like dirt beneath your feet. But times have changed. The Purple Emperor smashed your power, and I have joined the outlaws. I am free now, and a better man than your father and all his breed ever was. So you see——"

Something moved suddenly, and the girl's voice rose in panting terror. "Let me go! Let me go!"

Kent shot forward like the blast from a rocket tube. He whipped through slashing branches and tearing brambles as though they were paper impediments. The noise grew louder; the man's laugh was desirous, triumphant. Kent catapulted out into a natural clearing where a one-passenger rocket plane lay twisted and broken. Two figures were locked in struggle; a girl and a man. The man was dressed in outlaw green and his brutish face was inflamed with passion. The girl writhed vainly in his powerful arms. She was young and slender, and her bright, gold hair streamed in disorder around the pure, chiseled lines of her face.

The outlaw whirled at the noise of Kent's coming, thrust the girl violently

to the ground. His features contorted with rage, his hairy hand jerked at the ray gun that hung suspended on a thong from his belt. It was half clear when Kent leaped upon him. The young democrat's fist swept up in a lightning swing. It contacted with the point of his chin. The man lifted bodily off his feet and went crashing back into the underbrush. His ray gun sailed out of his hand and flew in a gleaming parabola into thick grass.

Kent grinned down at the girl. "I don't think he'll bother you any more, Anne of the Hudsons," he said. The girl was good to look at. The fact that she was an Oligarch of Yorrick and he a democrat of lowly Washeen did not matter if one was young and the blood leaped rather than flowed in one's veins. For the moment he forgot even that his antagonist was an outlaw, one of the very men whose assistance he had come to seek.

The girl rose lithely to her feet. She was tall; almost as tall as he was. "Thanks!" she said simply. "But how did you know my name?"

"I heard him call you that. What are you doing here in the Outlands?"

Her blue eyes clouded. "Yorrick has fallen, and my father—Edward of the Hudsons—is dead by now."

Kent's quick sympathy went out to this friendless, fatherless girl. "So has my native town—Washeen. But luckily my father is still alive. He is——" He caught himself in time. This was no place to divulge his secret. "My own name"—he smiled—"is Kent Halleck."

A whistle blasted through the clearing. Kent whirled on cat feet, to see the man he had knocked down withdraw a tiny mechanism from his lips. His jaw was swollen to twice normal size, but the triumphant glare on his features was unmistakable.

Kent caught the girl by her arm. "Come quick, Anne," he said rapidly,



Tiny dots formed on the screen—dots that swelled into innumerable small spheres of flashing metal.

"or we'll be cut off. He's called on his fellows for help."

Together they ran back over the dim, trodden path. It was over a hundred yards to the ship. Could they make it before—

THEY BURST out into the clearing. Kent groaned. Out of the very ground they seemed to have come. A motley band, clad all in green leather jerkins, but showing their diverse origin plainly on their faces. Men of Pisbor,

thickset and glowering; men with the stamp of reckless individuality on their countenances, fled from the ordered regimentation of Chico; workers to whom the swarming, rabbitlike existence of Yorrick had proved intolerable. And in every hand, snouting at them with deadly certitude, were the terrible comite disruptors whose very touch meant death.

"Halt!" rasped a tall, hard-faced outlaw.

Because there was nothing else to do,

the pair slithered to a stop. The girl's breathing was hurried, but there was no fear on her aristocratic countenance. She held her head high and proudly in the presence of these strange and terrible men. Kent looked longingly at the rocket ship. It was not over twenty yards away, but the outlaws were in between. And behind him, thumping with slow, halting tread, came the doomful steps of the man he had knocked down.

Silence held them all in a tight web. It would do no good to talk now, Kent decided. They were all comparatively young. Not one of them could have known his father. Not one would believe his fantastic story. He must wait.

A muffled growl came from behind. The erstwhile worker of Yorrick stepped into the glade. His hand gingerly caressed his swollen jaw. Triumphant hatred gleamed in his eyes.

"Thanks, comrades," he mumbled. "The girl is mine. And as for this fellow——" His other hand came up. The ray gun he had retrieved glittered wickedly in the sun.

Kent rocked on the balls of his feet, poised for a last desperate leap.

"Hold on there, Marko," the tall outlaw snapped. "As for the girl, she's an Oligarch and fair game, I suppose. But the lad's a native of Washeen. We have no quarrel with that city."

"He knocked me down," Marko snarled. "Besides, there are no more cities; only the Purple Empire is left. He's a spy."

Kent swung toward the tall man. "Don't you believe him," he said quietly. "I knocked him down because I found him attacking the girl. I never met her before. As for myself, I am no spy. In fact I am——"

"I don't give a damn who you are," shouted the former worker. "You're dying right now."

His finger tightened on the trigger

control. Anne screamed. Kent jerked desperately to one side.

"Drop it, Marko!" A new voice, cold, authoritative. At the sound every one stiffened. Marko opened nerveless fingers. The ray gun fell with a dull thud to the needed sod.

A man had appeared out of the very bowels of the earth. His frame was slight and spare, his hair was plentifully powdered with silver, his features were wrinkled. But his eyes were like those of a hawk.

He looked slowly from one to the other, and the men dropped their eyes. Only Marko stood his ground, sullen, but defiant.

"What's the meaning of this?" the newcomer demanded.

Kent stepped forward. "Just this. I came here on a message of the utmost importance from Washeen. I found this man"—he pointed to Marko—"attacking this young lady. I did what any man would have done. For that I am evidently to be killed without a trial, without a chance to explain."

The leader looked upon him with new interest. "From Washeen, you say? And with a message? For whom, may I ask?"

"For an outlaw named Allyn."

The old man's eyes glittered watchfully. "I am Allyn," he declared. "You may speak your message."

Kent's heart leaped joyfully. What a lucky chance! Allyn, the trusted lieutenant of his father!

"I would rather deliver it in private," he said steadily, "inside my rocket ship."

A growl went up from the outlaws. Marko cried eagerly: "Don't you see, chief, he wants to lure you into his power! Once inside——"

"Silence!" Allyn thundered. "I require no new recruit to teach me my business." His eyes wandered to the curious hemispherical ship. He started, swung back with strangely working features. His hand shot out, gripped

Kent's shoulder in a grasp of steel. "Where did you find that craft?" he demanded in strangled, intense tones.

Kent grinned. He was sure of his ground now. "Rightfully enough, as you will see—inside."

Long and searchingly Allyn looked at him. Then his hand dropped. "Very well," he said. "Let us go."

"And Anne of the Hudsons, too. I would not trust her with your men," Kent declared.

The tall outlaw jerked forward. "But, chief," he started to protest.

Allyn waved him aside. "Wait out here, all of you," he commanded.

THEY WENT IN through the open slide port. Anne first, Kent next, and Allyn last, hand resting on the grip of his conite disruptor.

Allyn's eyes widened at the well-remembered interior. A startled exclamation broke from him at the sight of the invisibility magnets. His disruptor was out now, trained on Kent. "If this is a trick——"

"Look at this," Kent answered, "and know the truth." His hand dipped into the chest. It came out rapidly. A blood-red bubble slipped into position over his head, masking his features. Yet, because it was univisual penetron, Kent could see every move outside.

Two simultaneous gasps rose in the narrow confines of the control room. A single name leaped from the mouths of the elderly outlaw and the young girl of the Oligarchs.

"Redmask!"

"Not Redmask," Kent corrected, his voice hollow within the oval round, "but Kent Halleck, his son."

The old outlaw's shoulders sagged. The incredulous light that had sprung into his eyes dulled. "You are welcome, Kent Halleck," he said haltingly. "The son of Redmask is an honored

guest wherever outlaws congregate. But for the moment I thought, perhaps, somehow, our old leader was still alive, returned."

"He is alive," Kent declared. "He refused to come with me to the Outlands. He preferred to stay in stricken Washeen to help his fellow citizens. He sent me on to seek your aid against the Purple Emperor."

Tears sprang unashamedly into the old man's eyes. "I knew it; I knew it all these years! Others declared him dead, but I felt that he had only gone; that some day he would return. Alas, he is sorely needed now. The outlaws have drifted into disorganized bands. They are thieves now, petty plunderers, like that Marko whom I should never have permitted to join our little band. They hardly deserve the noble name of outlaw any longer. The flood of newcomers know Redmask only as a legend, a memory. But I——"

"My father, Edward of the Hudsons," Anne broke in eagerly, "told me to seek safety in Washeen. He shouted the name, but I could not hear. For the Purple Horde was attacking and he slammed the port of the rocket plane into place so that I could escape."

Allyn nodded his head. "So you are the daughter of Edward of the Hudsons, and Janet of the Marches? Well I remember them. They were our prisoners. It was Redmask's most brilliant coup. It was he, my dear, who saved them from horrible deaths, and it was Redmask to whom your father commended you."

Kent, hidden behind the globe, said warmly—more warmly than he knew: "Redmask's son accepts the charge for him. I shall guard your safety with my life. But, Allyn—he turned to the old lieutenant—"you haven't answered me. I come for aid against the Purple Emperor."

A look of pain swept the withered features. "The Purple Emperor!" he

echoed. "What can we do against him? Even your father, Kent, in his day of greatest power, with the massed might of all the Outlands behind him, could not have coped with this ruthless, almighty being.

"He has hundreds of thousands of men, the fierce Anarcho-Individualists of the North whom he has persuaded or forced into his service; he has strange and mighty engines of destruction such as no man knows how to combat; he has now all the Continent in his grasp—the wealth and treasures and arms of the great city-states. What have we against him? My own small band of men—not more than a hundred—and a scattered disorganized band of outlaws, each under a petty leader, each engaged in mutual warfare. My jurisdiction extends over this glade and some ten square miles of forest. Nothing more."

Kent squared his shoulders proudly. "Once," he retorted, "Redmask ruled the Outlands. The city-states cowered behind their walls. Now the Purple Emperor has come. He will consolidate his power and harry the Outlands. He will conquer you, band by band, making slaves where only freemen roamed. Once you escaped from oppression and routine. Would you return to a slavery far worse than any city-state?"

Allyn's wrinkled features worked with emotion. "Never!" he answered fiercely. "We shall fight to the last man."

"Then fight while there is yet a chance of success. Redmask is not dead. His spirit is with the Outlands. And he has sent me, his son, all unworthy, to his old friends and companions for assistance. Shall I return and tell him it was denied?"

Fire flashed from the old outlaw's eyes. His hand shot out and gripped Kent's with tense emotion. "Hail, son of Redmask! Lead us as your father

did in years gone by. We are yours to command. Speak and we follow—against the Purple Emperor, against the whole world, if you wish. Come!"

He pulled Kent out through the port into the sunlight of the glade. Anne, eyes shining, heart a tumultuous throb, hastened after.

The outlaws, grim and glowering, made a semicircle around the craft, weapons alert for any treachery. But at the apparition in the blood-red globe, weapons dropped from nerveless fingers and a great cry burst from a hundred throats.

"Redmask!"

Allyn threw up his hands. "Yes, Redmask. Or rather, his son, heir to his ship and his potent mask. Your leader, outlaws, from now on, and ruler of all the Outlands."

The men burst into a mighty shout. "Son of Redmask, only lead us as your father did. Lead us to victory and spoils!"

SUCH was the legendary spell of a name. For only Allyn of all that group had served under Kent's father.

Kent took command at once with curt, short phrases. There was no time to be lost. The Purple Emperor would soon be swooping with his mighty battle fleet against the Outlands.

"Thank you, men, for your confidence in me. I hope to merit it fully before we are through. You, Allyn, shall remain my second in command as you were for my father. How many rocket ships have you available for instant use?"

"Three."

"Good! Tell off three competent pilots; send them out over the Outlands. Let them seek out every hidden band of outlaws; let them spread the news that Redmask has returned; that once more the Outlands owe him obedience. Let them give strict orders that there shall

be no more looting or harrying or internecine conflicts. Let each band send its leader to the rendezvous by fast rocket plane for conference and further orders. And you, my men, I charge you keep the secret well. From now on I am Redmask, not his son. What say you?"

A chorus of approving cries greeted him. Allyn called out sharply: "Balén! Odo! Maslon!" Three outlaws stepped forward. "You are to proceed with the planes at once on your missions."

They saluted and withdrew rapidly into the interlacing woods. The remainder of the band streamed tumultuously into the underground cavern. Only Kent, Allyn and Anne were left behind.

The girl flushed as she stared at the inscrutable globe of penetron. "You have proved yourself a leader, Kent Halleck," she breathed softly. "My father, Edward of the Hudsons, not even my grandfather, Charles of the Marches, could have done better."

"Thank you, Anne," Kent returned with a little laugh. "Perhaps you had better wait before you praise so highly. But please remember, I am no longer Kent Halleck. I am Redmask."

She threw the tall, well-knit figure a sidelong glance: "Your wishes are now my commands, sir," she murmured. "I am no longer an Oligarch of Yorrick. I am an outlaw even as you."

"We had better move your ship to its old hiding place within the woods," Allyn interrupted. "That spot has been kept sacred against its return."

"Look!" Anne cried suddenly, pointing. "Your messengers are taking off."

Two bullet-shaped ships leaped from the forest floor in a cradle of soft-roaring flame. They fled through the sky like blazing meteors, one to the north and one to the south, fiery missionaries to spread the news to all the Outlands.

Allyn's wrinkled skin puckered up in a worried frown. "Strange that Balén

hasn't taken off yet. He is the fastest usually of the three."

Something stumbled heavily down the tortuous trail. Anne gasped. "Oh, look at that poor man! What has happened to him?"

Allyn jerked his head around, then ran with a speed surprising in one of his age over the trodden sod. "Balén! For Heaven's sake, what's wrong?"

The outlaw pilot staggered blindly out into the open. His face was a gory pulp; the top of his head seemed crushed in by some tremendous blow. He collapsed with a gurgling moan at their very feet.

Allyn caught his battered head in his arms. "Speak, man! Who did this?"

Balén opened his bleeding lips with a tremendous effort. "Marko—was hiding," he whispered thickly. "He—hit me from behind. Stole the plane. Catch—him. O-oh!" A long exhalation, and the man was dead.

Kent waited to hear no more. Already he was diving down the trail, tight-lipped behind his masking globe. But even as he hit the recessed cut in the sloping mound, rockets jetted into flame-scarred pits.

The ship blazed up into the heavens like an evil comet. In seconds it was a disappearing dot to the southeast. Kent clenched his fist and swore bitterly. Before he could get back to his own craft and start in pursuit, pursuit would be hopeless. The ship was gone, and with it the traitor. Blind rage was succeeded by wiser thoughts. He must not be diverted from his tremendous task by what had happened. But some day, he swore with grim, set lips, he would find Marko, and then—

But Marko, dark face aflame with triumph, had other ideas as he winged toward the Washeen Channel. The Purple Emperor would be mightily interested in what he had to tell. He chuckled harshly. What should he claim for reward?

IV

THE NEXT MORNING brought a hundred planes fluttering to the little glade. The messengers had done their work well. A hundred outlaws stepped suspiciously from control rooms, glared at each in mutual distrust, and sank on the broad sod platform into the vast underground hollow, hands close to weapons, alert for any treachery. Only three had known Redmask in the early days. The Outlands were intolerant of age and those whose limbs had lost their pristine vigor. These Allyn took aside, whispered long and earnestly in their ears.

Kent stood lithe and alert before them. His head was covered by the penetron globe. A long murmur of awed respect greeted his appearance. The younger generation was not critical. The sight of the legendary mask was enough for them. Redmask, whose deeds were fabulous, had come back once more to rule the Outlands. And Allyn, who had been the hero's trusted lieutenant, was there as proof that all was well.

Kent made his speech brief and to the point. He did not want too close examination. He knew of his father's ancient exploits only from the tales current in the cities. Accordingly he played skillfully upon their predisposed veneration; he spoke of the menace of the Purple Horde, of this all-conquering, devastating flame that was sweeping the Continent, that soon, in its insane ambition, would leap at the Outlands themselves. A groan went up from the leaders of the hitherto warring bands. For long centuries the Outlands had been invulnerable against outside invasion, and now—

But Redmask had returned. That was enough for them. Their faces lifted to the blood-red globe with blind, unquestioning faith. Who was the Purple Emperor to compare with him?

Kent sensed their implicit obedience, and was at once exultant and afraid. Exultant that the Outlands would be a single unit behind him; afraid that he could not measure up to the mighty standards of his father.

"And now," he concluded, "return to your tribes. Organize at once on the ancient footing. Mass your men and rocket ships for immediate warfare. Further orders will come by radio signal. You have the code already. That is all."

A half hour later they were gone. East, west, north and south. Once more the Outlands were animated with a single resistless purpose. Once more the outlaws, spawn of a hundred diverse city-states, heeded the call of Redmask. The name ran like a fiery gospel over mountains and prairies, over lakes and broad rivers.

"What are your plans?" Allyn asked respectfully.

Anne listened quietly, eyes bright with interest. Already, she saw, the elder man had slipped with manifest relief into the old accustomed grooves of obedience. His long years of command had slid from his shoulders like an outworn cloak. While Kent—and she was surprised at the way in which this former lowly democrat and present outlaw dominated her thoughts—had slipped as easily into leadership.

Kent lifted his mask and breathed deeply. It was not a comfortable headgear, and they were now in the privacy of a rock-hewn chamber which once had been his father's quarters. "I haven't fully thought them out," he confessed, "but in broad outlines they are something like this—"

Sudden sound filled the chamber. It beat with unaccustomed echoes from the walls; it surged in a tumult of strange, thrilling rhythms about their ears. It was a succession of sounds such as Kent and Anne had never heard before. It was music, but not the music of the

fifty-sixth century. Cerebral, inhuman music that was built up from tonic scales and scientific formulas and spewed out by the music machines in endless flow.

This was the rhythm of an earlier and more primitive day; when song was fused in the warm alembic of human emotions; when sensitive human fingers evoked melting melodies and stirring pulse beats at the twist of a wrist. A resined bow drawing across vibrating catgut, tossing off the wild, warning notes of the Erl-King!

Anne looked fearfully around. Where was the unseen player? But Allyn knew. His aged countenance was a blaze of excitement; he raised his hand for silence; he tapped out with frowning eagerness the sweep and surge of the ancient song. The last somber note of plucked despair died abruptly. The cavern was a hushed stillness.

Kent breathed in an awed whisper. "That was my father, broadcasting a coded signal. Allyn, what did it say?"

The lieutenant seemed older than ever. There was the quaver of a defeated man in his voice. "He says, son of Redmask, that the enemy has discovered our plans; that even now he has taken off with all his forces from Washeen to seek our hiding place. Within an hour he will be here."

"The Purple Emperor!" Anne gasped.

"Exactly."

KENT'S eyes burned. "That means Marko has proved traitor." He filed that away for future reference and forgot it. No time for vain regrets, for futile rages. There was much to be done, and time was hideously short. Already, young and untried as he was, he was rising to true leadership.

He sprang to the alarm signal. The brazen note filled all the outer cavern. Outlaws jumped up from their couches, left their various tasks at the impera-

tive summons. Once more Kent was Redmask, clothed in the red penetron sphere. Orders crackled like a blaze of Dongan pellets.

"Remove all equipment; hide it in the depths of the Outlands. Odo, Maslon, tell off full crews for your fliers. Twenty each. Take off at once for the nearest outlaw caverns; join forces with them. The rest of you men proceed into the forest to designated rendezvous. Odo and Maslon will return to pick you up as soon as possible. Jonker, send warning signals to all the Outlands. Spread the news that the invasion has commenced. Tell all the chieftains to proceed at full speed ahead to point 4-9-5-0, near Pisbor. Pelnord of the Pisbor District will assume command.

"The massed fleet will descend on Washeen and destroy the garrison guard of the Purple Horde. On achieving control of the city Pelnord is to seek out one Stephen Halleck, a native of Washeen, and place his entire force under his direction. Stephen Halleck's orders are to be obeyed as implicitly as my own. Allyn, rig up at once an electric connection with the elevator. Leave sufficient conite shells to destroy the cavern and all within on contact of the platform with the underground passage. Perhaps the Purple Emperor may prove foolhardy enough to venture down."

In seconds the men scattered on their respective tasks under the driving lash of his orders.

"And we?" asked Anne. "What do we do?"

Kent stared at her. He had almost forgotten about this young and pretty Oligarch who had been thrown unwittingly on his hands. Where could she find safety now?

She seemed to read aright the inscrutable blankness of the globe. "I said *we*," she repeated determinedly. "I am not afraid."

"Very well," Kent retorted. "We

are taking off in our own rocket with Allyn."

"And——"

"We attack the Purple Horde on its arrival."

For the moment Anne was breathless. "Why, that would be suicide!" she exclaimed finally.

Kent grinned in the secrecy of his mask. "Not at all. I'll have the invisibility magnets on. They won't even see us, but our spy instruments will direct our weapons to their marks."

One hour later, on the dot, they took off, soaring high above the Outlands. Everything was clear. The outlaws had departed on their respective missions; the massed bands were congregating near Pisbor for their surprise thrust on Washeen; and the death trap was set in the cavern.

The rocket craft purred with muted sound through the stratosphere, swinging in a wide circle. Nothing was in sight; the sky was an immense void in which the stars burned steadily. No sign of movement in the Outlands; no sign that battle and sudden death were in the offing. Kent was at the controls. Allyn watched anxiously at the television screen.

"That's queer," he muttered. "They should have been here by this time."

"Do you think your father made a mistake?" Anne asked.

Allyn answered for Kent. "Redmask never makes a mistake," he told her proudly.

Kent grinned, and Anne subsided. The Oligarchs of Yorrick, she reflected, were not the only ones who had traditions.

Tiny dots formed on the screen, tiny dots that swelled into innumerable small spheres of flashing metal. Hundreds of them. And within their serried array, surrounded on all sides in a protective mantle, gleamed a deep-purple orb. The Purple Ball of the Emperor.

"Quick!" Allyn shouted. "They're coming!"

Kent snapped on the magnets. There was a deep humming sound, and the view screen blurred. The mighty, on-rushing fleet hazed into nothingness. Then all was a dull-gray blank. The light deflected around their hull, met again behind. They could not see outward any more, but neither could they be seen.

The spy instruments, inconceivably delicate secrets stolen from Yorrick by escaped workers, sprang into operation. They warned of obstacles; they held the ship to its appointed course; they plotted the vibrations of the approaching enemy.

The Purple Horde quivered beneath. They were directly over the hidden cavern of the outlaws. Anne shuddered, thinking what might have happened had they not received due warning. The three waited breathlessly, watching the tiny red streaks that delineated the tremendous fleet. Would it fall into the careful trap that had been set?

V

THE PURPLE EMPEROR sat motionlessly in his shrouded sphere. His eyes were fathomless and a faint smile wreathed his thick, coarse lips. He pressed a button. The three-dimensional image of Marko, the renegade outlaw, appeared within the hollow shell. It prostrated itself blindly.

"Is this the place?" inquired the Emperor.

"Yes, Magnificence." The traitor trembled. "If you will deign to descend, I know the method of entrance. They will all be caught like rats in a trap."

The Emperor did not answer. He pressed another button. Spy instruments, similar to those of Yorrick and of Redmask, buzzed. Kent had forgotten that the City of the Oligarchs had

yielded its secrets also to the Purple Horde. The red dots remained quiescent—all except one. That one moved in strange, cabalistic twistings. Twistings that were decipherable as the tiny flow of an electric current along wires to a gap that was as yet unbridged.

The Emperor's face darkened. Rage flamed over his features, died to cold, inhuman cruelty. His eye fell on the knowing simulacrum. His voice was expressionless.

"Like rats in a trap, eh?" he repeated.

"Yes, Magnificence."

The Emperor leaned forward, said coldly: "And we were to be the rats in the trap! It was a pretty scheme, a clever one. But the Purple Emperor is wiser than you, wiser than your masters, oh double traitor!"

The image of Marko cowered even as the outlaw himself cowered in the confines of Mogra's vessel. "I do not understand what you mean, Magnificence!" he cried frantically.

The Emperor's lips curled. "Of course not. You do not know that the cavern is vacated, that no one remains within its depths. You do not know that a current flows, waiting for us to bridge the gap in reliance on your treacherous word; you do not know that there are enough shells stored to blast us all to the moon."

Marko groveled. "I do not know of that. It is impossible; I——"

The Emperor pressed a button.

Mogra appeared. "Your will, Magnificence?"

"Rid me of that lying slave."

A faint, blue haze streaked across the battle sphere. Marko whiffed into component atoms. He had received his reward.

The scene faded from within the Purple Ball. The Emperor frowned. He had forgotten it already. His mind was on weightier matters. There was something strange about these Outlands. The stillness, the boundless peace.

What had Mogra said of Redmask back in Washeen when five of his spheres had crashed? Something about an invisible ship, was it not? His brow wrinkled; he adjusted all the spy instruments.

High overhead, at a designated point on the screen, a vibrational pattern appeared and took form. Yet nothing showed on the view instruments. He smiled mirthlessly and his lips bared back from his teeth. That meant only one thing.

His orders went out swiftly. A ray leaped like a lightning bolt to the ground. There was a tremendous concussion. Earth and rocks and trees heaved like a billowing sea into the air. At the same instant every deflector in the fleet tore at the huge magnetic beam that flowed interminably from the machines imbedded securely within the ice caves of the Magnetic Pole.

A huge tongue of force lashed out from the hurtling current, straight for the vibration focus. It smashed with supernal power into the invisible rocket ship. It blanked the controls, all electrical equipment. It plucked with terrible fingers at the magnets in their riveted stanchions; it overwhelmed their puny fields of force.

It swung the light waves back to their original paths, and behold! on the view instruments of the Purple Ball a strange, hemispherical rocket craft loomed into being with startling suddenness. The outlaw ship was naked to the weapons of its enemies.

The Emperor smiled and issued expressionless orders.

Kent swore and swung violently on the controls. The flier was rocking and twisting in a dizzy fall. Allyn and Anne fell in a tumbling heap to the floor.

The fathomless gray of the visor screens turned swiftly to a normal white. The controls did not respond. They were dead. Kent braced himself

against the hurtling gyrations, pressed his nose to the glassine view port. He swore again, luridly.

Sky and earth and a hundred whirling spheres tumbled dizzily about him. He knew now what had happened. Somehow the Emperor had smashed his electrical units, shut off his magnets. At the same time streaks of flame flared from the sides of the Purple fleet, seared through the air with disintegrating beams. One missed by inches. Death swirled around the falling plane; death by enemy weapons or by a crack-up. Either way—

KENT LUNGED for the manual controls. He swung levers. Rocket chambers opened under the emergency equipment; fuel pumped under pressure into the nozzles. Flame jetted from the vents. Luckily the tubes were still hot enough to ignite the mixture without a spark.

The ship steadied, trembled and soared upward again. The hull was made of a nonmagnetic alloy. The Emperor saw his prey escaping and howled orders within the privacy of his Purple Ball. The fleet surged up into the stratosphere after the fleeing craft. Disruptors, rays, exploding shells, sent their cargoes of destruction ahead.

Allyn staggered to his feet. There was a wide gash on his forehead, but he did not care. His veined hands clawed at the Dongan units. They were the only ones that required no electric current. Pellets screamed back defiantly. Kent jerked lever after lever, making their course the zigzag of a fluttering bird. The atmosphere was a blaze of ruining fire about them. It seemed impossible to outlive the destroying rain; the slightest touch would flame them into nonexistence.

"Got one of them that time!" Allyn chuckled exultantly. A shining metal ball fell in meteoric ruin behind. But there were a hundred more, coming

on faster and faster, growing hugely large in the glassine ports, hurtling disintegrating rays before them.

"It's no use," Kent said grimly. "They're all much speedier than our ship. They'll catch us in minutes if something doesn't happen."

"Why don't you try for the Purple Ball of the Emperor?" Anne asked breathlessly. "If he should die—"

"Good girl!" Allyn shouted. He swung the Dongan unit a little to the left, aimed carefully. The tiny pellets sped backward, true on their course. They flared into a red, spreading blaze over the purple sheen of the crystal sphere.

"A hit! A hit!" Allyn danced insanely. For Dongan pellets had this peculiar property: They burned with inextinguishable fires on whatever they impinged; they ate relentlessly through metal and flesh and the substance of any material known to man. The flames licked out, spread. The Ball was clothed in a blazing mask. Allyn swerved on Kent.

"The others will run like hares when they see their master dead."

Kent laughed mirthlessly. "Take another look," he advised.

Allyn stared out through the smoky blaze of weapons. Incredulity leaped into his eyes. The flaming, inextinguishable pellets were quenched, and after them, like the lead wolf heading the pack, surged the Purple Ball, shimmering with serene light, unharmed, seemingly untouched. The Emperor took no chances. The interlocking polarization was on. Nothing could penetrate that.

"If only we could contact your father," Allyn groaned.

"Not a chance of that," Kent answered. "Our receivers and transmitters are short-circuited."

They gyrated forward in a flaming inferno. It was a miracle that they had not already been hit. Their luck could

not last. Kent's eyes stole to the girl. Her face was white, but her smile was steady. "A thoroughbred," he thought admiringly. "Too bad that——"

"Hello, Kent!" Stephen Halleck said conversationally.

The three whirled around. Kent almost fell away from the controls. "Father, where are you?" he cried, eyes searching desperately, unbelievably, the narrow confines of the control room.

"Hello, Kent! Hello, Kent!" the voice repeated. "Signal that you are listening."

"Good night!" his son exclaimed. "I forgot. He has a crystal set installed in the receiver. Something that dates from the very birth of radio transmission. It requires no current to operate. He equipped this ship for every eventual-ity."

"You have not signalled." Stephen Halleck's voice grew sharp with anxiety. "That means that your power has failed or else——"

Somehow his voice trailed into faintness, then grew strong again. "Listen to me if you can. Washeen has succumbed to the surprise attack of the outlaws. Three hundred fliers are taking off at once to come to your assistance. The chances are we'll be too late. And even if we come in time, the Purple Emperor is invulnerable. I've discovered the secret of his power. It's a magnetic beam that sweeps around the earth. With that tremendous force under his control, he is unbeatable. Without it, he is defenseless. He would be naked to our attack. Kent, if you are still alive, listen well. We'll reach the path of the beam within an hour. That is too late."

Despair etched his voice as he spoke desperately into the silence, not knowing whether his son heard or not. "The Purple Emperor knows my plan. One of his men overheard my conference and got away to warn him. It is up to you. That magnetic beam of force

has its origin at the Magnetic Pole. The Emperor's power plant is there. Now if you could only——"

A HOWL of interference screamed through the tense control room. The Purple Emperor had tapped the wave and scrambled up the ether to blast the message.

Allyn turned to Kent with a hopeless gesture. "He was just going to tell us what to do. Now there is no other chance. Look!"

The pursuing fleet was not over ten miles behind. The rocket ship tossed in the lash of hurtling thunderbolts as if it were a cork in a hurricane.

But Kent's face was aflame with inspiration. His eyes had seen through the view port the peculiar spreading flare of the missiles where they impinged on the electromagnetic field.

"I've got it," he shouted. "Just what dad was trying to tell me when they scrambled his message."

Anne forced her voice to steadiness. "What have you got?"

"Hold tight!" Kent flung over his shoulder. He swung the controls upward, and catapulted the ship into the area of the field. The next instant they looped over and over in a long, helical drive. Earth was underneath one second; sky the next.

"Oh!" Anne gasped dizzily, and held on for dear life to a looped support. Allyn's blood pounded in his temples. "For Heaven's sake, son of Redmask, have you gone crazy?"

Kent grinned a tight-lipped grin. Deliberately he increased the speed of his spinning gyrations.

"Not at all," he shouted. "I'm merely imitating the operation of a simple dynamo. I'm thrusting the invisibility magnets in a helical drive through the field of force, thus setting up an induced current of electricity. This induced current constitutes a back E.M.F.

or electromotive force, which, because of the path of my spiral, will flow along the electromagnetic beam to its point of origin. The greater the number of spirals, the higher the E.M.F. If it's large enough, it should overheat the armatures in the operating motors at the Magnetic Pole and burn them out. That would mean—

The control room was filled with an unbearable whine. The universe was rocking with their mad flight, with the slashing path of the projectiles from the Purple Horde.

Suddenly there was silence. That is, silence in which the normal roar of the rockets could be heard once more. The frightful whine had ceased.

Allyn clawed madly to the view port. "Stop it," he screamed. "Straighten out, son of Redmask! Look!"

They peered eagerly out. Behind them, dropping like plummets through the empty air, fell the all-conquering battle fleet of the Purple Horde. Down, down, without a pause, accelerating in dreadful flight. And in their tumbling midst, protected even in death, fell the Purple Ball.

Anne averted her eyes quickly. The fleet, one hundred strong, smashed

simultaneously into the Outlands. There was a great puff of disintegrating matter, then the dust settled back into immemorial quietude. The Purple Horde was no more!

Kent's voice held awe. "An armature *did* burn out, and the magnetic beam failed. They had no other source of power." His arm reached for the trembling girl, tightened around her. She did not attempt to free herself.

"Anne! Do you realize what it means? The Continent is free again. Free of the Purple Horde and free of the city-states! Oligarchs, Dictators, Aristocrats, what-not, have disappeared. Henceforth there are free men only, bowing to no man or group of men."

Allyn raised his withered face. The glow of a new day was upon it. "Hail to Redmask, and the son of Redmask! They have saved the world from a tyranny worse than death. Look, Kent Halleck, out yonder to the south."

Through the view port they could see the massed might of the outlaws—hundreds of planes—surging toward them under full rocket blasts.

Kent grinned at the girl in his arms. "Dad will have more than one surprise ahead of him," he said meaningly.





The Phantom Dictator

by Wallace West

I CAME BACK to New York from a six weeks' fishing trip in Canada to discover that a new craze was sweeping the United States.

"Have you seen the latest Willy Pan picture?"

"Don't you think Willy Pan is just too cute for words?"

"Yeah. And do you remember what

Willy Pan said when he met the musk ox?"

"Willy Pan says——"

Such were the incomprehensible snatches of conversation that I overheard in Grand Central Station, on the subway and in the lobby of my apartment building.

"—but I thought the best part was

when Willy Pan went down to Washington and showed the President how to run the government," Miss Hawkins was telling a patient when I entered my office the next morning. "You know, there was an awful lot of good sense to what he said——"

"Who or what is this Willy Pan?" I exploded. "Never since the days when 'Ish-ka-bibbel' and 'You're telling me' took the place of conversation have I heard such a lot of senseless talk."

"Why, Dr. Brown," exclaimed the nurse, opening her blue eyes immeasurably, "do you mean to tell me you haven't seen the new motion picture cartoon? Why, it's better than the 'Three Little Pigs.' Willy Pan is the hero and he's just too cute for words. You should have seen him when he met the musk ox——"

"Yes. Yes," I said impatiently when she gave indications of continuing at great length. "But there's a patient waiting and I must get to work——"

"You simply must see Willy Pan as soon as possible." Miss Hawkins fluttered her eyelids provocatively. "His new picture is opening to-night at the theater around the corner. Maybe we could go see it?"

"We?" I stammered, startled by these advances from a girl who had always seemed the soul of competence and detachment. "Well—er—we can talk about that later." I retreated to the consulting room.

Even there I was not immune. Instead of reveling in a description of his symptoms, my patient insisted on telling the story about Willy Pan and the musk ox. The point of the tale was incomprehensible to me, but he went into gales of laughter at the climax and seemed deeply hurt—almost insulted—when I did not join him.

And there was something about the man's eyes which puzzled me. They had a slightly glassy fixation. Acting

on a hunch, I tested his reflexes. He had no reflexes! Yet, otherwise he seemed normal except for an extreme nervousness and excitability. This development puzzled me so much that I forgot Willy Pan in prescribing a tonic, complete rest, quiet, etc. Finally I got rid of the fellow after promising to see the new cartoon at the very first opportunity.

I had a busy day, for it seemed that all of my patients were developing some sort of nervous trouble. They arrived in a steady stream, but to save my soul I could make no diagnoses. A psychiatrist solves his problems by delving into the minds of those who consult him.

But to-day I could not do that. Something was blocking the process of free association and that something, I became convinced as the hours passed, was nothing else but the shadowy person of Willy Pan! The situation was beyond my comprehension and I had a first-class case of jitters myself when I put on my hat and prepared to leave for home at the end of office hours.

But I had reckoned without Miss Hawkins.

"Oh, Dr. Brown," she gurgled as I passed her in the outer office. "You haven't forgotten your promise to take me to see Willy Pan, have you?"

Good night! Had she finally developed a complex about becoming an old maid? Then, gazing into those wide, blue eyes, I realized that this diagnosis also was incorrect. Miss Hawkins wasn't trying to charm me. She was simply determined that I had to see Willy Pan, even if it were necessary for her to drag me to the theater. There was some inner compulsion upon her.

"Why, of course, I hadn't forgotten," I answered, deciding to get to the bottom of this mystery once and for all. "Shall we have dinner before we go?"

"Oh no! We must see the first show." She snatched up her coat. "I can hardly wait."

When we reached the theater we found a milling crowd outside, fighting to get to the ticket booth. Police lines had been formed to control the mob. Somehow we reached the lobby and after standing for an hour, obtained seats in the last row of the balcony.

A feature picture was on the screen at the time but no one was paying the slightest attention to it. Instead, a hum of conversation filled the dimly lighted auditorium. Every one was talking to his neighbors as though they had been old friends.

At last the feature ended with the inevitable clinch. Immediately the theater was pervaded by a deathlike silence as the screen blossomed with the title:

WILLY PAN

IN

THE MAGICIAN

Produced by

AMERICAN STUDIOS, INC.

Copyright 1940.

"Now you'll see him," whispered Miss Hawkins as a strain of music from the "Moonlight Sonata" filled the auditorium.

When I did see the cause of all this excitement I got a distinct shock. Although I knew Willy Pan to be a pen-and-ink creation by some master animator, the result was so lifelike as to be uncanny.

WILLY himself was eerie enough, with his misshapen goat's legs, pointed ears and engaging, pathetic smile. Somehow he was reminiscent of Charlie Chaplin. Perhaps it was this element of pathos which had so endeared him to a world beaten down by the never-ending economic depression.

But it was the background in which the creature moved that intrigued me most. Not only was the picture presented in natural colors, but by a new advance in screen technique it had a

lifelike three-dimensional effect. As Willy wandered from the far distance into the foreground he seemed to leave the screen and step into the same world with his audience.

"I told you. He is real," exclaimed my companion, and I was half convinced that she was right.

The ingratiating satyr wore a ragged dress suit and a battered felt hat. He carried a wand which sparkled at the end with varicolored, spinning lights. He revealed himself as a magician traveling with a bedraggled medicine show. The first few minutes of the film were highly amusing in the best "Mickey Mouse" tradition and caused the audience to scream with laughter as Willy proceeded to solve world problems and extricate himself from ridiculous and menacing predicaments by the use of his wand.

It was that wand which gave me a clue to the secret, but that clue came almost too late. Unconsciously my eyes had focused on the flickering light which blossomed at the end of the stick. As they did so I felt myself being overcome by a pleasant lethargy which somehow seemed to lure me on toward that strange world in which Willy had his being. It would be so easy to let go—

But another part of my mind still struggled to find an explanation for some problem which kept eluding me, as problems do when one is overcome by fatigue or sleep. Where had I seen such a wand before—searchlights—electrical discharges—reflections on a wet street at night?

The answer came with such a shock that I was jerked out of my reverie as by a dash of icy water. It had been in Vienna—years ago—when, at a convention of psychiatrists, a delegate had used just such a glittering device to prove that mass hypnotism was a possibility! He had not convinced the skeptics, but

—these people beside me were not skeptics!

I gripped the arms of my seat and gasped for breath. Something evil was going on here. I must not—I dare not succumb!

With a terrific effort I tore my glance from the screen and looked about me. The members of the audience were staring straight ahead like so many wax figures. I listened. Except for the voice from the screen, there was not a sound. For the first time in my life I was in a theater where nobody coughed!

Leaning over, I pinched Miss Hawkins on the arm. Although it must have hurt, she did not respond. Not a tremor passed through her tensed body. She was sleeping—with open eyes.

Clenching my teeth, I glanced back at the screen. Willy Pan had disappeared. Instead, the sheet was covered by writhing, many-colored shadows which whirled into strange, dreamlike conformations, like those which form under the closed eyelids of a person just sinking into sleep.

But Willy's slumberous voice still filled the auditorium.

"My friends," it murmured, "you are asleep, but you still hear my voice. You are bowed down by the great depression. Many of you do not have jobs. Some of you are hungry. Others have begged a few pennies with which to pay admission to this theater.

"Willy is going to change all that for you. Willy is going to provide jobs and plenty of money for every one. Willy is going to punish the rich and reward the poor by dividing the country's wealth. Willy can provide an income of five thousand dollars a year for every man, woman and child in the United States—"

As the voice droned on, the whole amazing scheme was revealed to me. Some one, somewhere, had at last perfected the trick of hypnotizing people

en masse instead of individually. Some one had rediscovered the secret of the old Hindu rope trick. Some one was in a position to wield power sufficient to make him master of the earth.

The voice was so compelling, so reassuring that I was tempted for a moment to believe that such power might be wielded for the good of humanity. Almost did I succumb to its charm. But then, I reasoned, would any one able to control the minds of millions of people use such power for their benefit instead of his own?

"In a few days," the voice was continuing, "the new order will begin. Heaven on earth will be at hand. Obey my wishes in this matter. I am working only for your good. If there is a man, woman or child in America who has not seen my pictures, make it your duty to bring him to the next showing. And if any one speaks evil of Willy Pan, denounce him. He is your enemy and mine. Now good night, my friends, until next week."

AS the concluding strains of the "Moonlight Sonata" drifted from the loud-speakers the audience stirred and sighed like an army aroused from sleep. Then came a tremendous burst of applause interspersed with whistles and shouts of approval.

"Didn't you just love him?" inquired Miss Hawkins as we moved with the crowd toward the exit.

"He was marvelous," I admitted a trifle shakily. "But what happened after the episode where he charmed the king's crown onto his own head? I think I must have dozed for a moment."

"Why that was the end of the picture, silly." She laughed. "The closing music started just after that."

"Of course. Of course. Well, I'm glad I didn't miss anything." Her answer had confirmed my suspicions. The conscious mind of the audience had not

recorded a word of Willy's concluding speech. But in the subconscious his words were having their deadly effect.

My confirmation of this belief came next morning when newspapers blazoned forth the information that the government had started a drive to end the depression by making the United States entirely self-sufficient. The first concrete steps were the taking over of all coal mines, railroads and other public utilities; the inauguration of universal conscription and the deportation of all foreigners.

There seemed only one thing left for me to do. I took the next train to Washington. I would try to see the President and warn him before it was too late.

But, despite my nation-wide fame as a psychiatrist, I made no progress at the nation's Capitol. True, I did see the undersecretary of an undersecretary, but when I broached the object of my visit he laughed me to scorn.

"Willy Pan a menace?" he jeered as he rubbed his hands together nervously. "Why you must be out of your mind, Dr. Brown. I've seen every one of his pictures. They're perfectly harmless."

After a number of similar rebuffs I changed my tactics. I called the White House for an appointment and explained that I had devised a scheme for wider distribution of the famous cartoons.

This time there was no delay. An hour later I was in the presence of the great man. He was smiling and jovial, yet I noticed that his facial muscles twitched repeatedly as though he were under great strain.

"Well, Dr. Brown," he beamed, "I've heard of you often and am glad to meet you in person. They tell me you're another supporter of Willy Pan. I'm glad that you approve of our new national hero. Now what is your plan?"

"Mr. President," I began hesitantly, "I am, as you say, friendly to this new

diversion, but I'm afraid the people are taking it a bit too seriously. They are too preoccupied for good balance. The number of nervous disorders among my patients has increased enormously——"

"What nonsense." He looked at me suspiciously with that telltale glassy stare. "I've seen more Willy Pan pictures than anybody in the country except my cabinet and members of Congress, yet I never felt better in my life."

"You mean you've seen releases not shown to the public?" A great light was dawning in my mind.

"Why, yes. Dr. David Jamieson, the creator of Willy Pan, has been kind enough to make up some cartoons which are shown only for the amusement of government officials. We find such shows take our minds off our troubles. They deal very cleverly with our problems down here, too."

"Did they suggest the taking over of public utilities and the universal conscription idea?" I asked guilelessly.

"Well, they did crystalize our ideas somewhat." He laughed. "Of course, we've known for a long time the necessity for making the United States self-sufficient and of obtaining new markets for our surplus products in South America and elsewhere, but——"

He stopped and looked at me doubtfully as if he had gone too far. "—but I don't know why I'm discussing government affairs with you, Dr. Brown. I understood that your visit had something to do with spreading the cheerful philosophies of Willy Pan, but I'm afraid you're no friend of his——"

I made some silly suggestion about reducing the cartoons to sixteen millimeter size and distributing them in the home. Then, as his suspicions seemed allayed, I asked my last question:

"Willy has suggested sharing the nation's wealth among the people. Is that on the Congressional program?"

"Oh, that will come later, much later,

after we have consolidated our position as the greatest world power." He smiled as he bowed me out.

I RETURNED to New York tired and depressed. Some sinister influence was at work setting up a veiled dictatorship in the United States. I could no longer doubt that. But was it this mysterious Dr. Jamieson or some one behind him? I did not know and there seemed no way of finding out. Plainly, the government had fallen unsuspectingly under the spell, for its nationalist tactics in the last few weeks had been entirely different from its previous policy.

The morning papers again confirmed my worst fears.

EUROPE PROTESTS AMERICAN EXPANSION IN SOUTH AMERICA

ENGLAND PROTESTS DEPORTATION OF HER NATIONALS

U. S. WARSHIPS QUELL UPRISING IN BRAZIL

WESTERN HEMISPHERE MUST BELONG TO U. S., SAYS PRESIDENT.

Such were a few of the headlines.

When Miss Hawkins arrived for work I called her into the consulting room and, under the pretext of treating her growing nervousness, tried every device I knew to break the hypnotic spell under which she labored. After several hours I gave it up as useless. Electric shocks, loud noises, argument, even a slap in the face brought no result. Her pupillary reflexes remained suspended; her other reflexes were dormant. And whenever I let her talk she reverted immediately to the topic of Willy Pan.

In despair I sent her away and paced the room until noon. If only there were somebody not under the influence of

the spell to whom I could turn for help—some enemy of Dr. Jamieson—some rival— With a whoop I grabbed my hat and dashed out of the office as though the devil pursued me.

Half an hour later found me in the palatial offices of the Mammoth Film Cartoon Corporation. The place was strangely quiet. Nobody sat at the reception desk, so I marched boldly inside and sought among the maze of empty offices until I found one marked "President."

"Come in," a tired voice responded to my knock.

Inside I found a florid, perspiring individual who looked as if he had just been engaged in tearing his hair.

"I'm Dr. Brown, a psychiatrist, and I've come to ask you what you know about Willy Pan and his creator," I began without preamble.

"I suppose you've come to induce me to attend a showing of one of those cursed pictures," screamed the executive. "Well, I tell you I won't go. See? I can make better cartoons with one hand tied behind me than that faker Jamieson can. Yes, I know all the theaters have stopped showing my pictures and replaced them with Willy Pan. And I know that my entire staff has gone to work for Jamieson. That makes me the goat, but I'll never lick that phony doctor's boots. Not Felix Weinbrenner."

"You haven't seen any of Jamieson's films?" My heart leaped.

"Of course not. Do you think I have to steal my ideas from a mug who arrived in Hollywood with a medicine show. Pretends he was once a great physician. Phooey!"

"Now, now," I soothed. "Don't get excited. I want you to help me expose this Dr. Jamieson." I outlined the situation in detail as I saw it.

When I finished, the motion picture magnate slumped into a chair and stared at me, goggle-eyed.

"You don't say. You don't say," he mumbled over and over. "And we're the only people not affected. Well, how can I help? Just give me a chance to get even with the crook who ruined my business."

"I want you to forge a Willy Pan cartoon," I answered.

"Me? Felix Weinbrenner stoop to imitation?" He popped up like a little balloon.

"So you can't do it?"

"Do it? I can do anything! But—but it will take me several weeks. Have to make thousands of drawings, you know, and all my assistants have left me." He stared at the empty offices.

"It's a matter of life and death for millions of people. Work night and day on it. Kill yourself if necessary. I'll help wherever I can and tell you just what I want done."

"O. K., Dr. Brown. Anything you say, just so it will make me even with Jamieson. I'll send over to the exchange for some old Willy Pan reels. Maybe we can use some clips from them and save time."

FOR a fortnight we worked like dogs on the pictorial forgery with which we hoped to reverse Willy Pan's deviltry. I was amazed at the infinite detail required to produce one short cartoon. There was an almost endless sequence of tinted sketches to be made, it seemed, each so similar to the next that only an expert could detect the difference. Then there was the problem of perspective, plus other technical quirks without number.

I learned somehow to do a lot of the detail work and when more help was needed I even impressed Miss Hawkins into service. I told her only that we had been employed to aid in the production of Willy Pan cartoons, gave her entirely disconnected duties so that she would not know what was going on, and whenever possible escorted her to and

from work so that she would have no chance to betray our secret.

At last we got the silent print together somehow. It was not perfect, but Weinbrenner had done marvels and he assured me that only an expert eye could detect the forgery.

Then the problem of superimposing Willy's seductive voice upon the film overwhelmed me.

"What are you going to do about that?" I asked my fellow conspirator.

"Where can you find a voice double?"

"Don't need to." He smiled with the conceit of superior knowledge. "I'll just pick up the voice from the old reels we have, record the words separately and rearrange them to follow your dialogue and fit the lip movements on the screen. It will be plenty difficult, but not impossible."

We worked all night on the re-recording and the next morning saw the job completed, even to my satisfaction.

The task had been finished not a minute too soon, the newspapers showed us. They related that Congress had delegated all of its powers to the President and gone home; that the entire population of the country was now garbed in green khaki uniforms; that the fleets of Europe were converging on our shores to stop America's expansion and that the whole country had been regimented on a war-time basis.

"Boy, you'd better get this film down to Washington right away." Weinbrenner had been reading over my shoulder. He was as disheveled and hollow-eyed from lack of sleep as I was, but his confidence was unshaken. It braced my waning courage.

"We'll have to try it out first to see whether it works."

"Nonsense. Anything I put my hand to just naturally has to work. And you haven't a second to lose."

I shook my head stubbornly, then as Miss Hawkins appeared at the doorway I suggested: "Let's try it on her."

"All right," he answered grudgingly. "I'll run the projector."

I ushered the unsuspecting girl into the stuffy little projection room and waited for Weinbrenner to start the reel. The lights clicked off and the title flashed on the screen to the accompaniment of the familiar "Moonlight Sonata" theme.

WILLY PAN

IN

THE PILGRIM

Produced by

AMERICAN STUDIOS, INC.

Copyright 1940.

"How cute he looks," gurgled the nurse as Willy stepped into the picture. He was dressed in the cassock of a penitent, with a long pilgrim's staff in his hand.

"Shhh!" I whispered. "Watch carefully."

For the first few minutes of the picture the little satyr's antics were performed in a hilarious fashion worthy of Jamieson at his best. Then, as the staff twinkled and whirled and the shadows began coiling over the screen, I felt the old pleasant lethargy stealing over me. It was only by a desperate exertion of will power that I kept from falling under the influence of the spell I had woven.

Leaning over, I pinched Miss Hawkins on the arm. She continued staring straight ahead, unaware of the pain. She was completely hypnotized! So far, so good.

Willy's face increased in size as it approached us until its enormous eyes seemed only a few feet away. Then it faded from the screen to allow the crawling shadows full play there. But the slumberous voice still filled the room.

"My friends," it murmured, "you are asleep, but you still hear my voice.

Willy has been wrong in putting you to sleep. He realizes now that he told you to do things which are not right. Willy is going to change all that. Willy tells you to awake now and forget all that he has told you in the past. Willy wants you to live your own lives, doing the best you can without his help. Willy tells you to awake and forget. Willy tells you to awake. Willy tells you to forget——"

THE VOICE faded away as the lights went up and the dreamy strains of the "Moonlight Sonata" filled the room.

I looked at my companion and held my breath.

Miss Hawkins was, in fact, rubbing her eyes as though rousing from deep slumber. At last she turned and looked at me. Her eyes widened with astonishment.

"Why, Dr. Brown!" she cried. "When did you get back? I thought you were in Canada. And where on earth are we? Is this a theater? But where is the audience? Have I been asleep?"

She jumped up, blushing in confusion.

"We've just seen a Willy Pan cartoon," I told her.

"Willy Pan?" She frowned. "Oh, that's the new picture. I remember now. I came to the theater to see it. But surely this isn't the theater——" She looked at me with charming helplessness.

As gently as possible I explained the situation and related all that had happened in the last two months. At first she would not believe me. Her mind was a blank for the entire period. But she was no fool and when I brought Weinbrenner in to corroborate my story and showed her the dates on the morning papers she struggled no longer.

"And you say everybody in the

United States is under the spell?" she gasped. "How dreadful. And these headlines! Another war coming. Oh, what can we do to stop it?"

I told her of the forged film she had just seen and of our plan to take it to Washington.

"I'll go with you," she said firmly, her blue eyes flashing. "If there's only three sane people in the country, we'll have to stick together."

"But there may be trouble—spies and——"

"I don't care. I won't be left alone in this town with a lot of crazy sleep-walkers."

"All right," I answered grimly. "Get your coat and hat. You, too, Weinbrenner. We're catching the next plane."

The Capitol had changed vastly since my first visit. An army was parading down Pennsylvania Avenue. Airplanes thundered overhead. Newsboys shouted war extras. "America for Americans," screamed banners hung across the street. And everywhere the green uniforms of the populace were in evidence.

I called the White House for an appointment.

"I represent Dr. Jamieson," I explained to the same undersecretary to whom I had talked before. "I have a new Willy Pan release for private showing to the President and his cabinet."

"That's fine," came the answer. "Bring it right over."

Something in the suavity of that reply frightened me. It was too easy!

I dropped the receiver, grabbed my hat and dashed out of the hotel room, shouting for Miss Hawkins and Weinbrenner to follow me. What a fool I had been! At least I might have had sense enough to use a drug-store booth,

where the call could not be traced so easily.

We had only reached the lobby when a group of secret service men surrounded us.

"Dr. Matthew Brown, Felix Weinbrenner and Mary Hawkins. You are under arrest for high treason, charged with attempting to forge a Willy Pan cartoon," said one, displaying his badge. "We have had spies watching you for weeks. You walked right into the trap."

I WILL NOT go into detail regarding our trial. What is the use? The glassy-eyed court-martial judges found us guilty as charged. The prosecution asked for the death penalty. Our attorney pleaded insanity—— He was a good attorney.

I am writing this in my padded cell in Matteawan. I can hear Weinbrenner cursing in the adjoining room. He is cracking up under the strain, poor fellow. Mary, brave little Mary Hawkins, is somewhere in the woman's section. I have not seen her since the trial.

To-day they let me read the newspapers for the first time. The war has started and is being fought with ghastly, soulless ferocity. Thousands—tens of thousands killed already. My only hope is that a universal nervous breakdown of the American people will end the carnage.

Sometimes I wonder. Is it I who am insane? Is this all a madman's dream? But I must not think such thoughts. We three alone are sane in a world of madmen. We must not crack. Somehow we can escape and start again. Weinbrenner! Can you hear me, man? Don't scream like that. Take it easy!

Mary——

Twelve Eighty-Seven

Part IV of an epic serial novel

by JOHN TAINE

UP TO NOW:

The "enemy" has been selling a strange new fertilizing "dust" of extraordinary potency to the United States in exchange for agricultural surpluses raised by the dust. American experts have been unable to discover the composition of the dust.

Young Jay Jarvis has joined the enemy research staff to carry on his extension of Mendeléef's periodic law, having been engaged by his university friend Count Tori, director of the enemy dust industry.

Jay has formed a sincere, if cautious, friendship with Tori's half-sister Nara, the daughter of Admiral West of the United States navy.

Hitherto only the United States has been sold the enemy dust; now the enemy is to sell to Russia and Canada, but not to Manchuria. This rouses the suspicion of the President's cabinet, who believe the enemy is waging a new kind of war on us with the dust whose effects, so far, have been wholly beneficial. They decide to suspend the dusting immediately, until Jay, whom they are backing, can discover its secret. He is now on Tori's scientific island. He and Tori are ostensibly good friends.

On arriving at the island, Nara insists on showing Jay the patients at one of the hospitals. These men are all former members of Tori's staff who are now suffering from a baffling and invariably fatal disease which they call "overwork."

The hospital roofs are painted with

the red cross, as in a war area. Nara says the patients had better be bombed than wait for death. Tori's "cottage" is bombproof and gasproof.

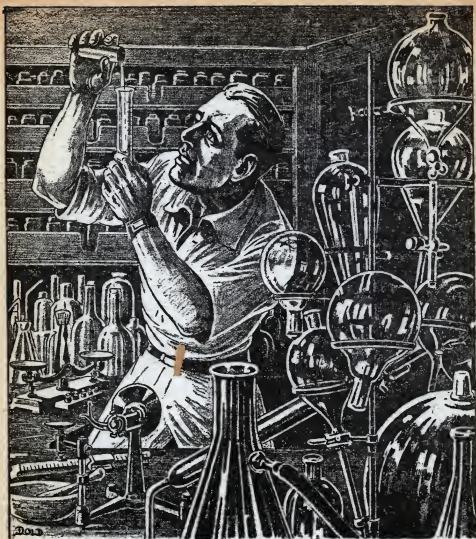
Jay lives with Tori and his pacifist, internationalist sister, Nara. All are very busy; Tori directing his scientific staff, Nara organizing her secret allies on the island, and Jay trying desperately to find a clue to the secret of the dust.

By a cipher in an American biological journal, the American geneticists have told him their discovery that 1280, on Jay's scale, is the number of the radiations emitted by the dust. This is totally unexpected by Jay, who had looked for a much smaller number. Tori catches Jay with the journal, says nothing, but shows that he suspects Jay of treachery. From Nara, Jay learns what he did not suspect—the most important and most dangerous work on the island is experiments on plants and flies.

XI.

THE NEXT DAY at lunch there was a terrific uproar. From the excited voices and the sharp, short gestures, Jay imagined that some terrible disaster must have overtaken the nation. Men he had never seen before—he learned later that they were key men from the biological laboratories—were haranguing tense groups of workers from the chemical and physical divisions, and one frantic exhorter was even standing on a chair the better to make his dire message carry.

Although he strained his attention to



*Quickly, and behind locked doors, Jay made his test.
He was careful to trust nothing to paper.*

catch what they were saying, Jay found the rapid speech in their own language too much for him. Presently he thought he detected something that sounded like "America" or "American." The word was repeated by other speakers, and Jay became aware that speculative, somewhat contemptuous, glances were being cast in his direction. It flashed through his mind that the United States

had declared war, though why he could not imagine.

The racket rose to a crescendo of contempt and indignation. Jay edged toward an exit. Just as he reached it, Tori entered. The word passed quickly that the "commander in chief" had arrived, and silence ensued. Jay noticed that Tori carried a copy of the biological journal with the coded message. It was

tightly rolled up, and Tori carried it not unlike a field marshal's baton.

"What's all the excitement about?" Jay asked, boldly taking the initiative.

Tori greeted him in his usual friendly fashion. "Nothing much, Jay. Three of your fellow countrymen have made fools of themselves. That is all." He unrolled the journal and opened it at the article by Davisson, MacMillan, and Spier. "One of our men in the experiment station read this yesterday morning as part of his regular routine of keeping abreast of the literature in his line. As you see, it deals with the effect of hard gamma rays on fruit flies and purports to be a study of the fluctuations of the fertility of the flies under varying exposures to the rays."

Jay nodded. "Something on the order of H. J. Muller's work, where he found he could make the flies produce freak offspring practically at will by dosing them with X rays?"

"In the same general direction, we ourselves have carried out thousands of such studies. And this"—Tori tapped the page—"is another investigation of the same sort by three of your leading geneticists."

"Have they found something new?"

An eager knot of researchers had gathered round them to hear Tori's remarks. Tori seemed to be enjoying himself.

"New? It is nonsense!"

"Then," said Jay, with an ill-advised attempt at levity, "it probably isn't new."

Tori trembled with rage, or excitement, or both. How dared reputable scientists publish such rubbish in a reputable scientific journal? Five minutes' perusal by an expert would suffice to show up the utter rubbish which these dishonest investigators were parading before the scientific public as the records of laborious experiments faithfully performed.

Jay had an inspiration. Waiting till

Tori ran himself out of steam, he played his first hesitant card.

"Is this what all the talk here has been about?"

"It is. Our workers take their science seriously."

"So I have noticed. And I take mine seriously, too, but not as an affair of life and death. However, that is a matter of national temperament, beyond arguing. When I came in and heard all the shouting, I thought war had been declared. Several of the speakers—I thought—mentioned America several times. That, and the shouting, threw me off."

Tori followed what Jay was saying with the closest attention. In spite of the concealed dynamite in the situation, Jay could not help registering a mental note that Tori at the moment looked exactly like a beady-eyed mouse concentrating on a difficult mathematical problem—if mice ever do concentrate on such things. He could only hope that Tori would fail to solve his problem.

THAT Tori suspected the truth—at least up to the point that the fake measurements probably concealed a message to Jay—seemed fairly certain after all that had happened. But that Tori or any cryptographer in his secret service would ever decipher the code seemed wildly improbable. Although he knew very little about such things, Jay still considered his code spyproof.

Probably, he thought, Tori's experts would exhaust their ingenuity searching the message for concealed scientific information of military value. As the message contained no such information, he felt reasonably secure.

Tori's suspicions would naturally be sharpened, and he might set half a dozen spies onto the suspect to assist the faithful Sam, but Jay felt that he could put up with it. His blunder could be turned into a brilliant success provided he

played his cards well. Not crediting the biologists' "1280," he must check it for himself as best he could; and his carelessness—or the intelligence department's—over the matter of the code had put the means for an expeditious check into his hands.

Tori seemed to resent Jay's allusions to the shouting of his fellow workers. Jay had meant them to annoy him.

"Your attitude," he said, "is all part of your code." Jay almost jumped, at the word, but Tori meant it another way. "You Americans consider it beneath you to get excited about things of the mind."

Jay felt relieved. "When we are among ourselves we take that pose, perhaps." The small crowd of listeners seemed deeply interested, and Jay continued: "But where there is no need to pretend, we drop the pose, and make as much of our own work—such as it is—as your people do of theirs."

Tori and some of the others looked politely skeptical. Jay decided it was time to convert them by a practical demonstration.

"As I am the only American here, I can afford to be natural. Why should I hide what Count Tori has always said I really feel?" he demanded of the crowd. "Just before he offered me the honor of a position on his scientific staff, he told me that I was as jealous for the honor of my country as he is for the honor of his. Why should I deny that he was right? There is no other American here to make me feel ridiculous."

The approving murmur which greeted this open confession encouraged Jay to proceed.

"To convince you that the honor of my country and the reputation of its scientists are as dear to me as are those of Count Tori to him, I shall ask him, as a special privilege, to be allowed to witness a repetition, by skilled geneticists, of this incomprehensible work of

my fellow countrymen, Messrs. Davisson, MacMillan, and Spier. Has any one attempted to duplicate their results?"

There were head-shakings and raisings of eyebrows.

One of the key men from the biological laboratories took it upon himself to answer: "Does not Commander Jarvis know that such experiments with fruit flies take several days?"

Jay apologized for his unpardonable ignorance. Physical chemistry, he regretted, had consumed the whole of his small stock of mental energy. But would the distinguished scientist who had just spoken tell them by what method he had proved the measurements of the American geneticists to be nonsensical rubbish?

"By looking at them," the biologist retorted.

Jay threw up his hands in a gesture of hopeless surrender. "If that is the spirit of science, I don't know what science is. In America they used to teach us that 'experiment answers all.' You gentlemen seem to have discovered a shorter kind of answer."

The debate precipitated by this shrewd thrust at the very foundation of their scientific integrity nearly brought the clubhouse down. One faction—talking German, mostly—insisted that no experiment was necessary to settle the question. Another group, shouting in English, held that the accepted theory of mutations in fruit flies under the influence of gamma rays was only a theory, after all; the American geneticists might have made a new discovery of fundamental importance, which it was the obvious business of Count Tori's scientific staff to investigate immediately.

A third faction, headed by Tori, talked in undertones among themselves in their own language. Jay let them fight it out among themselves, confident

that he should win. At last Tori clapped his hands sharply for silence.

"I should like to ask Commander Jarvis what he thinks would be the outcome of a repetition of the experiments."

If it was intended as a trap, Jay neatly side-stepped it.

"As I have said, I know only one kind of scientific truth—that which is reached by experiments that can be duplicated anywhere, at any time, by competent experts. So I cannot predict what will come out of a repetition of work about which I know nothing.

"But I can guess this much, from what I know of the care with which American scientific journals are edited: If this work proves to be as meaningless as some of you seem to think it is, then, I think, we shall find that the fault is the printers'. Dishonesty on the part of some compositor—a whole 'form' may have been dropped at the last moment, and the damage not reported as it should have been—would account for a great deal. So I do not know what to anticipate."

THE MAN who had exposed Jay's ignorance of genetics as applied to fruit flies, now very handsomely made a motion that Jay's first suggestion be adopted and that Jay be invited to view the experiment. After some scattering discussion, Tori put the question and the motion was carried unanimously. Jay thanked Tori, saying that he had expected no less from a corps of workers the least eminent of whom understood thoroughly the nature of science, and who were imbued with the essence of the scientific spirit.

He now felt that the key to the secret of the dust was practically in his hands. A few days in their biological laboratories, with ample opportunity to note technical peculiarities of the apparatus in use, would give him the hint he lacked toward a complete solution of his

problem. When he had solved it, it would be time enough to begin worrying how to get the solution to Senator Atkinson.

Jay left the clubhouse with the biological expert who made the motion to check the American experiments.

"You have had no time to look into genetics?" the expert asked politely.

"I'm sorry to have to admit it. Our American training must be much narrower than what your scientific workers get. They all seem to know something of every branch of science."

"Perhaps the men here are not a fair sample. They are quite highly selected from the best. The dust, you see, is an exacting taskmaster. With one hand it touches the innermost secrets of life, and with the other it reaches after the mysteries of unliving matter. Pardon me a moment; this man wishes to speak to me."

The man proved to be Jay's acquaintance of the previous day, the assistant Five. He exchanged a few words with the expert and turned away toward the entrance to the clubhouse. As he did so, he brushed awkwardly against Jay's side. Apologizing, he hurried away, without giving a sign that he had ever seen Jay before.

"The assistant of one of my colleagues," the expert courteously explained. "You are perhaps thinking of studying our language?"

In answer Jay replied in the language that he was doing his best. The expert congratulated him sincerely on the excellent progress he was making. A car drove up to claim the pleasant man, and Jay found himself alone. He reached into his coat pocket for his cigarette case, feeling hopefully for anything else that might have found its way into his pocket.

It was there—a paper package no larger than a short cigarette stub. Nara had succeeded in delivering half a teaspoonful of the dust to him. He lighted

a cigarette and hastened to his laboratory.

Sam, as usual, was plodding away at his interminable mathematics. Jay gave him a new job that would keep him out of the way for several hours.

"Go to the main library and get me all the data on the radioactivity of the elements in the rare-earth group."

Sam offered a mild protest.

"But Comm—Dr. Jarvis, there is very little material on that subject. I do not recall any papers dealing with the radioactivity of the rare earths. Are they not inactive?"

"Practically so," Jay admitted testily. "Did you think I was so green as not to know that? What's the matter with you fellows? Nobody around here seems to think I've been graduated from grammar school yet. It isn't the prehistoric stuff on spontaneous natural radioactivity that I want, but the recent work on induced, artificial activity. Get it?"

Sam was overcome with shame.

"I have been so busy keeping up with all this damned quantum mechanics"—it was the first time Jay had heard the industrious Sam swear—"that I have had no time to follow the experimental work."

"Why, Sam!" Jay ejaculated. "Didn't they tell you at the mission school it is naughty to cuss? But don't apologize. Hustle!"

Sam rose with alacrity, genuinely glad to escape from his endless calculations. This time Jay made no mistake. He turned the safety catch and then locked the door with the key. Slipping the key into his breast pocket, he set about his preparations for a little extremely elementary experimenting. Should Tori or any one else decide to pay him a friendly call, it would take him several seconds to locate the key, and he would not absent-mindedly throw the door open before he had time to conceal the evidence of his simple activities.

ALL Jay needed for the test he had in mind was a sensitive chemical balance and an accurately calibrated device for measuring small volumes of powders. Both were available in his combined study and laboratory.

The sample of dust which Nara had succeeded in sending him measured up a little more than half a cubic centimeter. He measured out exactly that amount and proceeded to weigh it with great accuracy on the chemical balance. A quick calculation on the slide rule gave him what he wanted—the specific gravity of the sample. He was careful to trust nothing to paper.

Next he took from a trousers pocket a small cylindrical box which had not been out of his pocket since the hour he left his father's office. This contained the sample of the commercial form of the fertilizing dust which he had obtained from his father. With equal precision he now determined the specific gravity of this dust.

The result confirmed a suspicion which he had entertained for some time: at least one form of the "improved dust" on which the biological division of the scientific staff was experimenting was not exactly the same as the commercial form used in the United States. The specific gravity of the improved form was definitely higher by at least two one hundredths of one per cent than that of the commercial form.

The obvious explanation of the discrepancy of course was that the improved form contained some denser ingredient than the commercial dust. In a sense, as Jay discovered later, this was true. But the sense in which it was true was trivial, and by itself could never have led to the secret of the dust. His next step, he hoped, would take him considerably further.

As he had just concluded his arrangements for getting into the biological laboratories, he felt for the first time

since arriving on the island that he was making real progress.

Neither Nara's sample of the improved dust nor his own of the commercial variety being of any further use to him, he poured both down the sink and turned on the taps. To make sure that the inquisitive Sam should find nothing to excite his curiosity, he also destroyed the paper which had contained Nara's sample and the cylindrical box by burning them in the flame of a gas torch. The ashes followed the dust down the drain.

Jay was fast mastering the psychological habits of Tori and his men. That Sam would have told Tori by this time that Commander Jarvis had locked himself in his study was almost as certain as twice two is four. Would Tori repeat his friendly visit of the previous morning? And if so, on what pretext? It rather amused Jay to speculate. To make everything appear natural, he peeled off his coat and sat down at his desk. Soon he was lost in his work. To heighten the effect, he had left the door locked.

The first tap on the door passed unnoticed. Jay heard the second. Grinning, he waited for the third. After some hesitation it came, a little more insistently than the second. Jay shoved back his chair with a scrape and got up to unlock the door, making as much fuss about it as he could. As he had expected, he found Tori smiling up at him.

"Sorry to disturb you, Jay," he began, innocently taking in the indubitable evidence of hard mental labor. "You were just in the middle of something?"

"That's all right. The rare earths stick out like a sore thumb on the new extension of the periodic law I'm working on. I just sent Sam over to the main library to comb the literature."

Tori seemed unaffectedly delighted. "You are on the track of another fundamental discovery. I know," he insisted,

brushing aside Jay's embarrassed protest. "There is the same gleam in your eyes there was before you made the other one."

"That's just the effect of yesterday's drive in the open."

Tori anxiously scanned his friend's face. "You feel all right to-day? Not tired?"

"Never felt better in my life."

"Then it will be safe enough, I expect. You will be there for only a few days."

"Where?"

"The genetics-experiment station. I just came to tell you that I have made the necessary arrangements for you to follow a repetition of the work of your fellow countrymen."

"Thanks, Tori. You don't know how much I appreciate it."

Tori's reply made Jay feel rather cheap. It was evident that the excessively nationalistic little man meant exactly what he said.

"I think I do, Jay," he returned quietly. "You remember how I have always said the honor of your country is the driving force behind your work, and not the personal, petty ambition which you like to throw over your true motives. Our people understand these things instinctively. Not all of yours do. Because you are one of the rare exceptions, I am deeply gratified to be able to help you." He hesitated, then went on somewhat soberly: "Although I share the convictions of our experts that the work of your countrymen is nonsense, I would rather have it otherwise. Do not take it too hard if the experiments prove our experts right."

"I shan't. But if they do, I shall certainly write a stiff letter to the editor. Whoever was responsible for that careless job of printing should be fired."

Tori regarded him with melancholy eye. "Perhaps it is best after all that we should keep our faith even when it is based on a delusion."

"But mine isn't!" Jay expostulated.

"I shall not argue with you." Tori smiled. "Au revoir. I shan't be home to dinner, but I shall see you in the morning before you start."

XII.

JAY dined alone. The maid who served him said that Nara had gone for a long drive by herself, but would be back about midnight.

The following morning he did not wake up till half past eight. Being half an hour late for the usual breakfast hour, he hurried through his dressing and hastened to the breakfast room. Before he reached it, he heard his hosts' voices raised in violent altercation. They were speaking in their own language, far too rapidly for Jay to follow. He tiptoed away, thinking to get out of the house unobserved. Just as he reached the front door, he heard Nara exclaim in English:

"I shall tell him myself!"

He heard a chair shoved back and rapid footsteps. She spied him.

"Oh, there you are! Is it true that you are going to work in one of the biological laboratories?"

"Yes; if your brother's offer still holds good."

"It does. Have you any idea of the danger?"

"There can't be anything very dangerous about experimenting with hard gamma rays on fruit flies. There must be scores of laboratories all over the world engaged in the same sort of work at this moment. Any danger from burns is negligible."

"What you say may all be true. I don't know. But I do know that the biological laboratories here keep our rest homes and hospitals well supplied with casualties. Why must you do it?"

"For the honor of his country." It was Tori, emerging from the breakfast room, who had spoken.

"Honor!" Nara flashed. "Are you never going to grow up and forget your silly medieval ideals of chivalry? This is the twentieth century."

Tori went white with fury. "You can use that tone to me in private, but not before a guest. If you do not control your tongue, I shall have you sent away."

"Try it!" she scoffed. "Your master himself may take a hand. Your assumption of authority is growing just a little bit too presumptuous."

Wishing he could escape or sink through the floor, Jay edged away.

Nara sharply called him back. "We must have this out. My brother talks of honor. Is a fantastic crusade to vindicate your fellow countrymen—he has told me your crazy plan—worth the risk of a lingering death? At your age?"

"But, really, Nara, you exaggerate the danger out of all reason. There simply isn't any worth considering."

"If you won't believe what I say you must see it with your own eyes. Come on."

"Where are you going?" Tori demanded.

"To Hospital Ten."

"I could forbid you," he said slowly. "On this island I am dictator. Our master has delegated his authority to me in all scientific matters."

"This is not a scientific matter," she retorted. "It concerns a human being."

Tori shrugged his shoulders. "I shall not exercise my authority. After all, you are my sister. Jay shall go with you if he wishes. Then, if he chooses, he may abandon what you—with your advanced modern views—call his 'fantastic crusade' to vindicate the honor of his nation."

He turned away.

"Cheer up, Tori!" Jay called after the retreating figure. "What you said yesterday was true. I haven't the slightest intention of changing my mind. I'm

just going with Nara to preserve diplomatic relations in the family." He smiled at Nara. "Bring on your dragon, fair lady. I'll bet it's only a garter snake."

"You shall see," she returned grimly. "I will do the driving. The chauffeur dislikes going where we must."

"All right. Suppose you pick me up after lunch? I promised to give Sam something to do this morning."

AFTER LUNCH Nara called for Jay at the club.

The first four or five miles passed in silence. Nara seemed rather ashamed of herself for the dressing-down she had given her brother before a guest.

Thinking the frost had lasted long enough, Jay broke the ice: "Thanks for that sample."

"Of what?"

"Dust, of course."

Nara was not in the mood to acknowledge any part in the transaction. "You don't trust me," she said.

"Well, to be quite plain, Nara, why should I?"

"You will trust me less when you hear what advice I have to give you."

"About keeping out of the biological laboratories?"

"No. You will have to decide that for yourself after we have visited the hospital."

"Then what is it?"

"I am not sure that I should give you any advice. You might only misinterpret my motives and think I am trying to spy on you—double-cross you, as the Americans say."

"After all, Nara, how can I tell that you are not double-crossing me?"

"I know of no possible way you could tell." Then she added, a trifle maliciously: "Unless you were to use your common sense. But I suppose you are too scientific to do anything so sensible."

Her reply nettled him. It also made

him think, not wisely, perhaps, but shrewdly.

"Between ourselves, wasn't that little show this morning staged for my benefit?"

"What do you mean?"

"Didn't your brother put you up to it? Not crudely, of course, but rather to convince me that you are not on his side?"

"So that you would confide in me?"

"Something of the sort."

"And then, I suppose, when I had picked your mind I was to present my brother with what I found?"

"Why not? If you and I were in America, and our positions were reversed, would you trust me?"

"Perhaps not."

"Then why do you expect me to trust you?"

"Didn't the sample of dust which the son of my old friends stole for you at great personal risk to himself suggest anything to you?"

"That's just it, Nara. It suggested a lot. For all I know it may have been a trap."

"If you are as wide awake as that, let me give you my advice now, before you go to sleep again. Don't attempt to communicate in any way with your biological friends in America."

Jay was startled, but he kept his head. "Sometimes you talk in riddles. What's it all about, anyway?"

"This road is rather narrow and too winding for talking while I'm driving."

"So you won't tell me?"

"In a moment. I am looking for a safe turn-out. There is one about a quarter of a mile farther on."

THEY rounded a sharp curve. About fifty yards ahead they saw one of the regular turn-outs, spaced every mile or so along the narrow mountain road. Nara slowed down and parked.

"This will do. A high bank on one side and a precipice on the other, with

a rushing torrent at the bottom. We are not likely to be overheard. Do you know where I was last night?"

"The maid said you had gone for a drive by yourself."

"Not quite. I sat here for three hours with a very dear friend. I picked him up at a lonely spot in the woods not far from the clubhouse, just after dusk, and offered to drive him home. He said he would rather talk to me than to his wife."

"Trying to make me jealous?"

"Hardly! My friend is seventy-two years old. Perhaps you saw him yesterday at the clubhouse."

"I do remember an old gentleman with thick white hair and tortoise-shell glasses. He was one of the crowd listening to me speechifying."

"Yes. He told me all about it, and he remarked how clever you seemed to think yourself."

"Nice of him."

"You can't realize how nice. That man is not only a great scientist, but one of the most skillful statesmen in the cabinet of my brother's master."

"He did look like my idea of one of the famous elder statesmen, now that I recall him," Jay remarked. "What else did he tell you?"

"A great deal that should interest you. For instance, all about the suspicions of my brother's secret-service agents—they are not his personal agents, of course, but the government's. Your assistant Seventeen—Sam, you call him—is one of them, but he does only routine work of an inferior grade in the direct spying. His knowledge of practical human nature is about zero."

"So I have guessed for some time. You remember I told you about catching him rooting around in my wastebasket. What do these hypothetical agents suspect—if anything?"

"I was coming to it. All that nonsense in the biological journal which

your American friends wrote conceals some sort of a code."

"Rubbish!"

"It may well be. But why were you so rash as to swallow the first bait my brother dangled in front of your nose?"

Her slightly mocking tone enraged Jay.

"Your brother dangled nothing before me!"

"You didn't even see it?" she mocked.

"Look before you eat, hereafter."

"I'm looking. Hard! Is that a hook in your hand? You must take me for a blind sucker."

"Sometimes I'm almost tempted to." She sighed impatiently. "I suppose I shall have to open your eyes for you. Why, oh, why did you threaten to write 'a stiff letter to the editor' if the biological experiments should come out the way my brother's experts say they must? Don't you see that was just what the secret service was trying to trap you into saying? You plan to send out a code message in your 'stiff letter,' for the editor to pass on to the United States secret service. And that message will contain the secret of the dust—when you find it."

Jay still kept his head. "If your brother's agents are so good at guessing, how is it they haven't guessed this imaginary code of mine?"

"Give them time," she replied softly. "They are patient and they are very expert."

"Almost too expert for their own good. Who has been filling you up with fairy tales this time? Leaving out your highly imaginative deductions, where do you pick up your supposed facts?"

"All that I have told you," she answered calmly, "came from my old friend—the man you saw. He has known me since I was a year old. He has known my brother longer. My brother relies on his realistic knowledge of human nature. That is why my

brother consulted him about you. In fact, my friend helped my brother to prepare the bait which you swallowed. That interview you had with my brother in your study yesterday afternoon was all arranged by my friend. Shall we drive on?"

"Wait a minute! How do I know that this friend of yours exists?"

"You saw him."

"Of course—if that's the man you have woven all this romance around. Sometimes I think you kid me just to keep your hand in for your next visit to America. But I'm not falling—yet. Tell me how I can check up on this friend of yours. Don't you see? You could have made your story out of whole cloth from what your brother told you. All you would have to know would be his account of what happened yesterday at lunch time, and what we said when he came to tell me that I could watch the biologists doing the experiments of those Americans over again. Given as much as that to work on I could spin a pretty fair yarn myself."

"I should think you could do even better," she said.

"What makes you think that? Trying to flatter me?"

"No. You are so stupidly suspicious sometimes—excuse me for saying so—that you would see a hundred cross purposes where there isn't one."

"ANYWAY, Nara, I admire your outspokenness. You hit straight from the shoulder. I've enjoyed this hugely. But why did you go to all this trouble?"

"Partly because I like you, as I told you on the boat. Partly because I think you have the stuff of a good internationalist in you, and I believe your help will be necessary to our side before we can win."

"Is that all?"

"Not quite. I do not want to see you shot."

"Shot? Who would shoot me?"

"Not my brother. He likes you too well, even if he did bring you here to steal your work. You see I can call a spade a spade when it makes things clearer. No; my brother would never order your execution. But his friends would. They would appeal directly to their master if necessary. And I think they would be sustained. The death sentence for spies is perfectly just—as justice goes in this world—and it has never been suspended. Your own government might protest, but it could do nothing. You will be shot if they catch you spying."

"Then I shan't be shot, because I am not spying."

Nara did not reply. Putting the car in gear, she got back on the narrow road and drove on.

"Is the lesson over?" Jay asked after a minute or two of silence.

"It hasn't started yet."

"Gosh! When does it begin?"

"In about an hour. At the hospital. If that makes no impression on you, I may take you for a long drive from there down to a beautiful little rocky bay. The moon will be full to-night."

"Fine! Nothing like a breath of sea air for clearing the head. I'm not so sure about the moonlight, though."

"Neither am I," she admitted, and Jay experienced a warm glow. Her next remark cooled him off. "Sometimes I think that may be what is the matter with you."

"Say! If either of us is loony, it isn't I."

For the rest of the drive to the hospital they forgot their worries and thoroughly enjoyed themselves as only young people can. They sobered abruptly when the first of the peaceful rest homes came into sight.

To avoid disturbing the patients, Nara crept by at a snail's pace. Jay could not avoid looking curiously at the long row of patients resting in their

cane chairs the length of the airy porch. One man, about the middle of the row, was sitting up, staring mournfully before him out at the dark-green pines on the hill. Jay thought he recognized him.

"Can you stop a minute? I think I know that man sitting up."

Nara stopped the car and Jay got out. He was not mistaken. The man he had recognized was indeed the gentle, older man whom Jay had grown to like at the clubhouse.

"How are you?" he asked, shaking hands.

The question was unnecessary. Already the flesh beneath the transparent skin of the face was the color and translucent texture of freshly-cut phosphorus.

"Rather tired," the man replied listlessly.

Jay hesitated before putting his next question: "Are you in pain?"

"The first stage is not painful. I shall avoid the second."

"You'll be back at work in a few days?"

The man shook his head. "We never go back. I would not if I could. I am glad it is all over."

"Didn't you like the work?"

"The work was interesting."

"Then why not take it up again?"

"I do not believe in its purpose. Sitting here dying, I see farther than I did when shut in by the four walls of my laboratory."

"Do you mind if I ask what the purpose of your work was? Please don't bother to answer if it tires you, or if you would rather not."

"World supremacy for our nation."

"So I have suspected myself. You no longer believe it possible?"

"We could achieve it for a generation, or possibly a century. Then the balance would be destroyed. The gain is not worth the cost."

Jay glanced along the line of dozing

men. "The cost in all these lives and the others that have gone the same way?"

"These are nothing. They are paying for their ideals. Most of them knew they would never come out alive, yet none regrets his sacrifice."

"You can't tell me what the cost would be?"

"I do not mind. Our own lives, as I said, are nothing. They have been given willingly. But the hundreds of millions who must perish before the war is won will not go to their deaths willingly. They also are human beings with a right to their lives and their ideals. We are asking too much of them."

"I think I see. Are you an internationalist?"

"I am nothing but a dying man."

"Is there anything I can do for you?"

"You might get me a drink of water. The attendants are all busy at this hour, and I am too tired to get up myself. There is a tap in the hall."

"I'll find it."

Entering the lobby, Jay discovered why all the attendants were busy at that hour. They were wheeling out the patients whose condition had taken a definite change for the worse during the night. The still forms, including the faces, were covered with sheets. An attendant looked up at Jay's intrusion.

"A friend outside wants a drink."

The attendant nodded, indicating the drinking fountain at the far end of the hall. Jay filled a large paper cup and made his way back through the sheeted forms. The attendants were wheeling them toward a side exit.

"Where are they going?" Jay asked an attendant.

"Hospital Ten."

A HAND of one of the patients had slipped out from under the sheet and was hanging limply down over the side of the ambulance. Jay tried not to look

at the dangling hand, but could not help himself. His own hand shaking so that the water spilled, he hurried on.

The tips of the fingers of the hand he had seen were shapeless lumps of gray jelly. The texture of the remainder of the hand was still like that of the face of his friend waiting for the drink of water. Jay stumbled out to the porch.

He handed his friend the cup.

"Thank you."

Jay could have prevented his friend from slipping the capsule from his hand into his mouth. A swallow of water dissolved the thin covering. Jay left his friend fast asleep. He did not bother to pick up the cup which had fallen from the tired hand.

"How is your friend?" Nara asked.

"I left him sleeping."

Nara started the car as noiselessly as was possible. "Many go out that way. Most consider it a disgrace."

"Did you know my friend?"

"Quite well. If he had lived he would have joined us."

"Would he have escaped this if he had?"

"Probably not. About as many of our men as theirs go. They all do the same kind of work. There are far more on their side than ours, so our casualties are much less. But the percentage is as high."

They drove on in silence for almost two hours. Once Jay had been on the point of making some remark, when he saw two ambulances ahead of them round a turn in the road. They overtook the ambulances and entered an extensive park with broad, sweeping lawns. An arrow indicated the way to Hospital Ten.

"How far is it?" Jay asked.

"Just through those trees. About half a mile."

"Slow down a minute."

She drew off the road and stopped. Jay thought in silence for a moment.

"How has the work been able to go on with all these casualties?"

"There were very few at first—not more than one or two every six months. Then they began working on what they call their 'improvements,' and the casualties began to rise. They had foreseen the possibilities and the hospitals were ready."

"If it keeps up at this rate they will defeat their own end—whatever it may be. There won't be a corporal's guard left six months from now."

"No," she agreed.

"Then isn't that the answer to what you tell me you are trying to do?"

"No."

"Why not?"

"That comes in the third part of your lesson. You haven't had the second part yet."

She started the car. Jay sat speculatively gazing at the trees ahead of them.

"Let's skip the second part. I saw enough at the rest home."

"I imagined you might. Shall we go on to the third part?"

"Go ahead."

XIII.

THEIR LONG DRIVE ended a few hundred yards from the shore on the western side of the island.

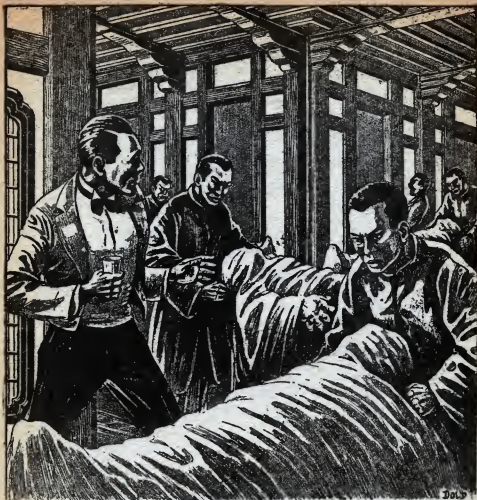
"Are you hungry?" Nara asked. "I am."

"So am I. But I don't see that we can do anything about it in this wilderness."

In the waning light the small heath where they had stopped gave an illusion of immensity. Nara got out of the car.

"Come on. I'll see that you get your dinner."

Jay followed her down a narrow, winding path through the heather. As the last of the daylight faded, the moon rose, golden, full and enormous. Still



Jay tried not to look at the dangling hand, but could not help himself. They were on their way to Hospital Ten

there was no sign of human habitation. The path made a sharp turn. Two tall, graceful spires, five miles or more away, suddenly came into view, silhouetted against the broad disk of the moon.

"There you are," said Nara.

"What? Do we have to walk to that wireless station for our dinner?"

"Not unless you wish. The relief crew lives not far from here. They are expecting me—but not you. You are just an afterthought that occurred

to me this morning when my brother and I were arguing."

Before he knew it, Jay had almost stumbled over a skillfully camouflaged cottage. Like Tori and Nara, the wireless operators who lived here while off duty were prepared for air raids. In response to Nara's knock the door was opened by a young man, rather taller than the average of his race, in undress naval uniform. Two other young men, similarly attired, rose respectfully from

the table where they had been playing some game when Nara entered.

Jay noted the look they gave her. It was the same sort of look of implicit trust that Five had given her. She introduced them to Jay in their language, with an apology for him that they understood no English. Jay's response elicited polite bows and grave smiles from the three. Nara laughed.

"Do you know what you said to them?"

"I thought I did. Was it awful?"

"Not so bad. You told them that you loved their grandmother."

"Rather a good beginning. If you want to talk to them, go ahead."

"Thanks, I will. First, dinner."

A rapid conversation with the young man who had admitted them produced the desired result. Leading them into a small room on the left of the sitting room, he summoned his companions to help him with their guests.

The table had already been set, but with places for only four. A place was laid for Jay, and one of the three began serving the meal direct from the charcoal stove. The main course was fish—somewhat flabby, as Nara was later than they had expected. During the meal Jay sat silent while the others talked so fast that he recognized only a stray word here and there. When the dessert was brought on Nara remembered Jay for the first time since they sat down.

"You must think me awfully rude," she apologized, "but I have planned this visit for three weeks. Any other night would have found one of the other members of the crew here. All the rest are on the other side."

"Don't mind me." Jay laughed. "I'm having the time of my life watching you four uncrowning kings and kicking emperors off their thrones. You go at it with such gusto. But aren't you afraid you'll get caught at it some day? What would you do if your brother were to walk in on us now?"

"Sit here and finish my dinner, of course. He knows I have friends."

"And you and your friends would keep right on talking?"

"Don't be silly."

"I'll try not to be. Please tell your friends for me that their dinner was darned good, and say I'll stand them the best in America any time they come to Chicago—if I ever get back there myself."

"You will get back," she said softly.

"Things are black enough, but they might be blacker. I'll give them your invitation."

She evidently made it attractive, for the three young men rose as one and bowed beamingly. Jay also rose and bowed. When they had resumed their seats, Nara turned casually to Jay.

"DOES the number 1287 mean anything to you?"

If Jay was startled he did not show it. "It might mean a lot, or it might mean nothing. What's the connection?"

"Still fencing with me? Then let me tell you that that number—1287—went on the air yesterday afternoon, from the wireless station where these men work, shortly after you sent Seventeen—Sam—to the library to hunt references on the induced radioactivity of the rare earths. Does that suggest anything?"

"It might. Sure it wasn't 1280?"

Nara interrogated one of the wireless men.

"It was 1287, as I told you."

"Did anything else go on the air?"

"That is why I asked you about 1287. The full message was: '1287 on Jarvis scale.'"

"There is such a number on my scale. The theoretical limit is 2000."

"You admit that 1287 does mean something to you?"

"Only what I have told you."

She searched his face for some clue to what was in his mind.

"Will nothing that I can say make you trust me?"

"Tell me what 1287 means."

"How can I? I have had no scientific training beyond high school."

"It would be precious little help to you if you had. I know no more about 1287 than you do."

"But you said there is such a number on your scale."

"I did. But suppose some one were to tell you that the temperature yesterday noon in London was 1287 on a common Fahrenheit thermometer. Would you believe him?"

"Not unless there had been a second great fire of London at that hour."

"You get the point. So far as I know there has been nothing like a great fire in my stuff. It would take something like that to make me believe that what corresponds on my scale to 1287 exists. Just like the 1287 for a probably normal temperature registered on a common thermometer. If there is such a thing as what corresponds to 1287 on my scale, I never heard of it."

Again she tried to read his face. "If you are not telling the truth you are being very foolish."

"To repeat your own question you asked me a moment ago—will nothing that I can say make you trust me?"

Nara looked miserable, and he felt sorry for her.

"We don't seem to have got very far with one another since that night on the bridge." She sighed. "In fact, I am beginning to think you trust me less now than you did then."

"What about you?" he retorted.

"I have more to lose than you if I fail."

"Fail in what?" he demanded.

"Stopping the indescribable disaster which must follow if my brother succeeds. I have told you before. There is no need to go over it again. I can see from your face that you remember what I told you."

"I remember perfectly. You said the laboratory men on your side predict disaster."

"Isn't that enough to make you choose my side? All you care about is discovering the secret of the dust—to save your country money and incidentally break my brother's people."

Jay was silent. Even if his motives—from one point of view—could be described in Nara's realistic terms, this was no time to court failure by getting too confidential with a subtly charming young woman. His father's remark that all he needed to make him spyproof was some experience with girls, returned to trouble him, and he wondered just how much he really knew of Nara, her professed internationalism, her pacifism, and her attitude toward her brother's fanatical ambitions.

Everything she had done so far could be interpreted in either of two ways. Either she was exactly what she professed to be, an ardent internationalist convinced that her brother's success would mean indescribable disaster for the world, or she was an extremely able spy on her brother's side.

If the former, her moves to frustrate her brother were precisely that and nothing more; if the latter, all her actions were being directed to the end of making Jay part with the knowledge which Tori's friends believed he possessed, and which was essential to the success of their campaign.

If only he could think of some decisive test to make Nara show her real hand, he would know what to do. But no such test suggested itself, and Jay wisely resolved to watch himself and avoid, as far as possible, giving her any lead which might lose him the game.

NARA ROSE from the table. She thanked their hosts and turned to Jay.

"There is a beautiful little bay about a quarter of a mile from here. I thought you might like to sit on the

cliffs for a while and watch the moonlight on the water before we drive back."

"You bet," he agreed enthusiastically. "But I give you fair warning I never feel very romantic just after dinner."

"Nor do I." She laughed. "That is why I insist on eating first."

The three young wireless operators saw them safely started on a shortcut to the bay, and turned back to their cottage.

"Nice fellows," Jay ventured.

"True as steel," she replied. "They are taking their lives in their hands, and they will throw them away, if necessary, without a regret."

"Your side seems to have its fanatics, too."

"Some might call them that. I don't."

"Nor do I," Jay hastened to apologize, "if your side is really doing what it thinks it is."

"I believe it is," she said slowly. "But I have to take the word of our friends in the laboratories for what I can't understand myself. I wish they had made me study more science at college. Then I could have judged at least whether the scientists have anything at all to go on, or whether they are just letting their nerves get the better of their brains."

"You have your doubts, too, then?"

"Not really. Something—call it intuition if you like, although that means nothing—tells me that I am right. I have worked with so many human beings in so many countries that I must have learned something of human nature and human motives. Our side is right, if there is any sense in anything human."

They had come upon the sea suddenly.

"There it is!" Nara exclaimed. "Isn't it perfect? Look at the reflection—oh!"

She stopped with a gesture of impatience.

"What's the matter?" Jay asked,

thinking she had twisted her ankle. "Let me see."

"See for yourself. There they are—crossing the silver lane of the moonlight. Can't they leave even that undefiled?"

She sat down on the stunted heather. Jay cautiously sat down beside her.

"The patrol again?"

Two battleships, about five miles from the shore, were steaming slowly by in the moonlight. Nara was still staring out to sea, her face a mask of contemptuous disgust. For once Jay almost believed he was getting a glimpse of her mind. If she was acting she did it extremely well—better in the moonlight, in fact, than she had ever done in broad daylight with all her wits about her and fully conscious of her audience. When she spoke it was more to herself than to him.

"You ugly brutes. Some day you will be abolished."

"I think they're rather beautiful," Jay remarked coolly, "drifting across the moonlit water like that. What have you against them?"

"Nothing," she answered curtly, somewhat to Jay's surprise.

"Then why the grouching?"

"Because they are out of date. Medieval. As antiquated as my brother's ceremonial sword and armor. If they must kill one another, why can't they forget the melodrama and do it scientifically and efficiently, even beautifully?"

"As the other side—according to you—is trying to do?" Jay suggested.

"As they would like to do. And as they will do, unless we can prevent them."

"Excuse me for pointing it out, Nara, but your logic is all haywire. In one breath you damn out the battleships for doing their job, and in the next whoop it up for something—according to what you hint—far more devilish. I don't get it. Here! What's the matter?"

Nara had sunk her head on her arms. "I hate it all," she wailed. "Let me alone."

His common sense prompted him to take her at her word. Presently she raised her head.

"I'm a hysterical fool," she said. "Please forget it."

"There's nothing to forget."

"Thanks. I didn't drag you out here to look at the moon and listen to my howling. Let us go on with your lessons—this is the beginning of the third—and last."

"I'm ready. Shoot."

"First, what time is it?"

Jay easily read the dial of his watch in the brilliant moonlight. "Exactly ten forty-eight."

"Remember that. In exactly twelve minutes—at eleven o'clock—a light that has burned for more than three years will go out instantly. I brought you here to see it go out."

"You mean the moon?" Jay asked facetiously.

"Something much more important. Look about thirty degrees to the left of the lane of moonlight. Look hard. Do you see something?"

"I see nothing—wait. Yes, I do. Or is it my imagination?"

"What do you see?"

"A faint yellowish glow just visible above the horizon. But the moonlight and—"

"It is not an illusion. That glow is all you can see from here of the yellow flames we saw that night from the bridge. For more than three years they have been trying to extinguish those flames. Scores of islands, dotted all over this archipelago, have flamed like that at night ever since my brother ordered the first fleet of the dust export trade to sail. All of those islands will suddenly cease to flame at eleven o'clock to-night."

ALTHOUGH there was no breeze and the night was mild, a chill crept up Jay's legs and stole up his spine to the roots of his hair.

"I suppose the flaming islands are where they manufacture the dust?"

"Of course. And the ships of the dust fleets take on their cargoes there, too. Seven days from to-night the fleets will sail with full cargoes for the United States, Canada, and Russia for the next dustings. Does that mean anything to you?"

"It might. How long does it take to load the ships?"

"Forty-eight hours."

"That leaves five days. Forty-eight hours seems rather speedy."

"You have taught us efficiency," she reminded him. "The loading could be completed in ten hours in an emergency. All the work is done by machines."

"I'll grant that for the sake of the argument. Then what?"

"Indescribable disaster. I am only quoting my friends on the scientific staff."

"Granting that, what can you or I do about it?"

"You can do nothing."

"Well, that's easy, anyhow. You're not in a very cheerful mood to-night, Nara."

"You're wrong. You can do nothing to stop what you have started, but you can still save your own life."

"What have I started? All the weeks I have been here I haven't done a single, blessed thing."

"You think you have not. As a plain matter of fact you have solved the fundamental problem my brother brought you here to solve. Didn't I tell you that one of the things they hoped you would discover is the secret of controlling those flames—the glow we saw from the boat?"

"Sure. I remember all that. What of it?"

"And didn't you guess that the 'fun-

damental discovery' my brother and his staff have been looking for ever since the world dust monopoly started is just this secret of learning how to control the glow?"

"Suppose I had. What then?"

"Would it surprise you to learn that you have discovered how to control the glow?"

"Surprise me? It would knock me silly."

"You have."

"Nara, you're crazy. It must be the moonlight. Come on, let's go home."

"Not till eleven o'clock. Do you still see the glow? Then keep watching it, for this is the last time you will see it on this earth."

"All right, I'll take a long last look and imagine I've discovered how to turn off the light—by Heaven! There it goes."

"Look at your watch."

"Eleven, exactly."

"Shall we go home?"

"Wait a minute. Sit down. You may have staged all this. For all I know they may shut down the dust factories every night at eleven. Then the glow—whatever it is—would naturally go off. You say I have found out what your brother and his crowd have been trying to get ever since they started the dust business. Now I'm going to pin you down. Tell me exactly what I have found."

"You have found 1287 on your own scale."

"Are you crazy? No such number occurs anywhere in my work—either in the tabulated results of experiments or in the theoretical calculations. And if it did I should not know how to interpret it."

"Really, Jay, you are slower than I thought you were. The number 1287 does occur in your work—in the work you have done since you boarded the steamer to come here. Seventeen—Sam

—has been very industrious, has he not?"

"If there were twenty-five hours in a day, Sam would have put in twenty-six."

"You have given him parts of your calculations to do?"

"I shoved practically all the mathematical physics his way. To be quite frank, most of it was beyond me. Of course, I intend giving Sam full credit when our joint paper comes out. The things that boy has cleaned up make me look like a dishwasher in a hash house. He's a genius—except in spying."

"That is where you are mistaken. Seventeen is no common spy. His genius is for spying out other men's subconscious ideas from the work they can only half finish themselves. He took the problems you gave him, and solved them. Completely. Without your ideas to start him, he could have done nothing, perhaps. But you sowed the seed and he picked the fruit. Sam has robbed you in a way my brother could never have done. He has made the fundamental discovery my brother was counting on you to make."

"So I've been scooped? Well, that's interesting. I must be better than I thought I was. And as for Sam, he must be in line for a Nobel prize."

"He is," Nara said quietly. "My friends on the scientific staff say he has already been nominated by the committee—not for what he has just done, of course, but for his work of five years ago."

"By the way, what is his real name?"

NARA told him.

Jay whistled. "The best man in his line outside of Germany. Gosh, if I had only known."

"What would you have done?"

"For one thing I would have kept my problems to myself. For another,

I would have fired him on the spot when I caught him looting my wastebasket. There's no use crying over it now. Next time I'll have more sense."

"If there is a next time," she suggested softly. "Why not draw the obvious conclusion now and make up your mind to keep out of the biological laboratories?"

"Why should I?"

"Because you will probably come out very tired—only half alive. Like your friend on the porch this morning."

"So they hope to get rid of me that way? I thought you said your brother would never stand for seeing me executed."

"He won't. But this has gone beyond his control. They are afraid that you yourself will discover what Seventeen has found by following your work—not immediately, perhaps, but in five or ten years. Then you would be too dangerous to be at large. Although the war will be over long before then, you might show the Americans or the Canadians or the Russians—or the handful left alive—how to launch a counteroffensive. Without my brother's knowledge or consent the elder statesmen will see to it that you expose yourself to fatal danger that you know nothing about. My scientific friends tell me it will be quite easy."

"Perhaps I am less ignorant than you think I am. If I step into one of their booby traps it will be my own fault. With all these hints you have given me, I shall deserve to get caught if I do."

"You are determined to go on, I see. What will you do with the secret of the dust if you do discover it?"

"Supposing that is what I am really after, I imagine the logical thing to do with it would be to use it in the obvious way. Provided, of course, that your brother is generous enough to pay for my steamer ticket home."

Nara laid her hand on his arm.

"You have told me exactly what I want to know. If you succeed you will give the secret to your country. By doing so you will join the enemy. What has tempted my brother's people will tempt yours."

"Not necessarily. If America manufactures its own dust, that will be enough. We have no great yen to hold up the rest of the world—by cutthroat competition or monopolies. But mind, I am not admitting that I have the slightest idea of how the dust is made. I haven't; and so far as I can see, I am not likely to find out in any reasonable time. So your fears about America are a bit premature."

"They are not. You will succeed. And, unless you are forced into a rest home, I believe you will find some way of returning to America with your discovery. If not, you are intelligent enough to invent some scheme for getting the secret to your government. Then—as surely as human nature is human nature—the knowledge will be misused. No—don't try to argue; I know. You have your science; I have my experience in the United States and every country of Europe."

Jay laughed. "In that case, I should think you would want me to join your noble army of martyrs and rush right into all the risks you say I must avoid. I don't get you, Nara."

"Don't you? I have told you I like you. What sort of a friend would I be if I did not warn you?"

"You might even help me to escape?" he quizzed. "I have no illusions about my status on this island. Since the day I landed I have been as much of a prisoner as any man in Sing Sing on a life sentence. Would you help me to get away?"

"I might."

"On what condition?"

"That you join our side."

"If I do, what then?"

"You are to give me your word that

you will make no use whatever of anything you learn here for ten years. You are not even to hint to any one that you have discovered anything. Further, if others try to find the secret of the dust and consult you, you are to mislead them as skillfully as you can—for ten years."

"In the meantime the dust monopoly goes on. I value my life as highly as the next fellow, but ten years' virtual slavery for the rest of the world seems a pretty steep price to pay for my own existence. Can't you make it less? Wouldn't one year do? I might even make it two."

"NO. Ten or nothing."

"Split the difference and make it five."

"Not a day less than ten years. I hold all the trumps. You had better agree."

"I'll be damned if I do."

"Then you will have to get home by yourself. You will escape eventually. But not a moment before you have spent ten years on this island."

"It sounds to me, Nara, as if you pack an iron fist in your velvet glove. Aren't you telling me that you—or your brother, perhaps—intend keeping me here ten years unless I agree to your terms?"

"You might put it that way," she admitted coolly.

"Straight from the shoulder, as usual. All right. What makes you think I would keep my word once I got safely back to America?"

"What my scientific friends tell me. They say if you do discover the secret of the dust and what it really means for the world, you will be glad enough to agree to our very reasonable terms.

They believe you have normal intelligence."

"Even after what has happened between Sam and me? They're a generous bunch."

"Far more generous than you seem to realize," she said sharply. "Unless they were decent human beings they would offer you no terms at all. But they are decent, and they happen to believe that those who would attempt to teach the world common sense and common decency must show some sense and decency themselves."

"And they think they can teach the rest of us not to make fools of ourselves in ten years?"

"They will let the older people go, and concentrate on the young. A tremendous beginning has been made already. Ten years from now the children in the grade schools will be mature young citizens. They will be the ones to decide what the world is to do with the secret of the dust. Ten years is all our side asks. With the start already made, ten years will be ample."

"It seems to me," he objected, "that you are counting rather too heavily on your side winning. How do you know the others won't wipe you all out before you get fairly started?"

"We don't know, but we must take the risk. If we fail, we fail. Well, the suspense cannot last much longer, which is something to be thankful for. We shall know, one way or the other, a week from to-night, when the dust fleet sails. It must be past midnight. We had better be starting home, or my brother will think we have eloped."

"Not such a bad idea at that," Jay remarked, helping her up. "However, I've too much on my mind just at present to get the most of out of an elopement."

"And I on mine." She laughed.

To Be Concluded.

This Month and Next

This month I give you back Jack Williamson in one of his finest pieces of science-fiction. I would say the finest except that I've just scheduled another one for the next month which took my breath with its speed and force.

With him in this issue is a fine group of writers: Schachner, Stuart, Haggard, West, Van Lorne and Taine. But you have come to expect that—and you have every right to take such a group as a matter of course.

However, next month completes our second full year's effort with the NEW Astounding. And in planning this issue I looked back at the September, 1934, issue. It was an interesting comparison. We had progressed a long way during that first year, had gathered a great group of writers. The Skylark of Valeron was running. We had just changed the type to gain more words. A pace had been set.

During the last year we have maintained that pace, introduced new authors, published some great stories. And now as I look at the schedule so far arranged for September, I'm proud of it. We've held the pace. We've kept faith with you. And you have kept faith with me as you'll know when you see next month's cover.

Jack Williamson, John Russell Fearn, C. L. Moore, Raymond Z. Gallun, Frank B. Long, Jr., Donald Wandrei, John Taine, C. B. Kruse! That's all so far. Some of the best stories these writers have ever created. It's going to be a glorious peak issue for our second year's drive, and it promises great things for our third year.

You will be proud to introduce this issue to your friends. I need your consistent coöperation on that point. We must not let our progress slacken for an instant. When you pass your dealer, why not ask him to reserve an extra copy for you next month, and then pass it along to a friend? There couldn't be a better month to introduce it.

We have built a compact, loyal group which needs only careful cultivation to become the progressive force in American scientific achievement. We are not sufficiently unified. Instead of thirty or so, small loosely held groups, we need a coöperative spirit which will gradually draw us all closer together.

Astounding Stories hitched her wagon to a star and has progressed upward because of that. Our eyes have been fixed on the heavens. I'm tossing the thought to all of you who are leaders of small groups. You hold the torches. Combine them and you will hold a beacon light.

Meantime, think over my suggestion about an extra copy of next month's magazine to pass along to a friend. Will you?

—The Editor.

Let's Get Down to BRASS TACKS



AN OPEN FORUM OF CONTROVERSIAL OPINION

Slam! Slam! Slam!

Dear Editor:

Undoubtedly this letter will not be printed. However, I am writing it with the hope that it will.

You persons who assume yourselves authorized judges of science-fiction seem to have rather a high opinion, not only of your judgments, but also of that which you judge. The creditability of its merit is, to say the least, worthy of miscreance. It is so much so that most persons of cultivated mind and taste—and any one may qualify for inclusion in this category—shun this type of reading. May I make an example of a rather typical passage?

"Haanishaw treated himself to a derisive guffaw as soon as he was sure the sound could not reach his victim. 'Now I've got him where I want him,' he gloated, and the harsh voice echoed eerily in the vastness of the deserted laboratory building." It is, obviously enough, intended to be a parody on science-fiction. It certainly succeeds.

I have no means of estimating the exact amount, but I would be extremely surprised if there were more than five thousand persons who read science-fiction. Yet this tiny group seems to feel quite exclusive and holds its watery pride in a sieve of absolute trash. Seldom have I seen such tickling humor as this: "O yes! O yes! O yes!—the laopumumpstfnsa—they don't rate capitals—terrible light ray—flash-light."

How subtle; how clever; how ingeniously sardonic! That is, evidently, an excellent example of wit as produced by a mad fan in order that he might rise in his status as a reader of science-fiction.

A certain H. A. Moores appears to be endowed with more extensive common sense than any person who has thus far lent light to your columns. There is no point which he made with which I do not agree.

Naturally one realizes the utter hopelessness of attempting to salvage any soul whose mind has sunk into the incredible swamp of science-fiction. All that may be done is: Stand up on your hind legs and howl!

Of all the vile, inane, narrow-minded, cramped, badly written, badly plotted, badly executed, and

badly ending drool that this earth has ever witnessed, science-fiction in plain slang "takes the cake." H. H. Welch, 1733 Canton Avenue, Milton, Massachusetts.

The Ranks Increase!

Dear Editor:

Bob "Dictator" Tucker received my contribution of half-smoked cigarettes but returned them because they were not his brand. However, that contribution made me a member of the SPWSSTFM. Now that I have taken the oath of the seven dead suns, my life is dedicated to the removal of wire staples.

The March issue of *Astounding* was fine. *Proxima Centauri* was a very good story of human emotions. *Mind of the World* was the best story in the magazine. The two best short stories were *Blindness* and *Cordiacs Vera*.

Mr. van Kampen seems to have thrust his head into the hornets' nest when he wrote *The Irrelevant*. I thought his story was very good, and the science was convincing. If any one can disprove his theory by a physical demonstration, I'll be willing to listen. Neris to Milton Kaletsky and Ima Kemist.—Ima Notha Kemist, Robert Anglin, 252 Jefferson Avenue, Danville, Virginia.

A Few Roses!

Dear Editor:

For the past few years, I have been a consistent, though silent reader of your magazine. Frankly, until seven months ago, there was nothing much to write about. It was a good magazine, but that was all. Your achievements in the past months, however, are epoch-making in science-fiction. May I express here and now, in my first letter, my heartiest congratulations to yourself, your writers, and your publishers!

I have, as your Brass Tacks authors, scientists, etc., term it, a few roses to pass out, and not a few brickbats. Let's get the worst over first!

Brass Tacks itself—a great idea, educational

in its form. A fine place for controversy on any subject. Let's keep it just that and nothing more. Why waste precious space on requests for better pictures, straight edges, printing changes, etc.?

The controversy on van Kampen's *The Irrelevant* has been most interesting. Possibly the best argument put up to that author was the letter written in the April issue by David Bohm of Wilkes-Barre, Pennsylvania.

My congratulations to you, Mr. Bohm, but just between us two and Brass Tacks, was it just because of lack of space or convenience that made you disregard the effects of gravitation and absolute space? Your theory may well be more complete if you take into consideration the velocity of propagation of physical and static electromagnetic efforts and reactions on your escaping gases.

A word to Jack Wilson, writer in the same issue: It was just about a year ago that we bared, for the most part, the pet bugboo of science-fiction, or, as Mr. Wilson puts it, blood and thunder. Why not let it lie in peace? I think, since its unmentioned death, we have a story of a higher type, educationally and morally.

Shall we, then, go back to the old type of story? True, they were, for the most part, tales of sesquipedalian magnitude, but can you tell me any one of them that made you think, that taught you anything? I am sure that the intelligent reader of *Astonishing* is one who likes, as a whole, stories with a bit of adventure, a spot of romance, but a base of science, cold and hard.

Mr. Pritchard, a word to you: Energy cannot be defined as taken form.

Mr. Sheffleman: I would like to shake your hand. You have saved me a lengthy discourse on armchair scientists such as Mr. Hehr.

Mr. Keating seems very sure that space travel is impossible, a belief only tolerated by high-school students. Mr. Kenting, may I say that I am not a boy, but a man without seeming ego, widely traveled, and educated in one of the largest colleges in the U. S. A. In my opinion, space travel is highly probable, and within the next half century, Mr. Pritchard's perambulations on science are imperspicuous questions, though fair.

A word about the *Skylark*. Undoubtedly, it was over a good many heads, but very good. Mr. Editor, more power to your thought-variants!—L. H. Horton, Buffalo, New York.

June issue was bad. It contained only one good story, *The Orb of Probability*. There was not a single decent scientific theory advanced in the whole issue.

Sixth: I can see nothing wrong with van Kampen's *The Irrelevant*. It is my belief that those who do are merely a group in the minority whose intelligences are so meagre that they are unable to grasp a new idea. Another thing: If all these arguments for less speed are correct, *The Irrelevant* must be traveling backward at a tremendous speed.

Seventh: This is already too long, so I won't say it. —Arthur R. Mink, S. F. P. S.—Society for the Prevention of Societies—1715 Washington Street, Boise, Idaho.

The Dictator Replies!

Dear Editor:

Say, brother member. Number 13, did you know that copies of *Astonishing* over three years old are still in circulation on the West Coast? These chain-letter senders out yonder, in their frantic hunt for new names and addresses must have dragged out a lot of ancient *Astonishings*. I received several chain letters with former addresses on them, one dating back three years. So take heed, you fellows sending chain letters, and save postage on my name, for I have already made my ten thousand and am not interested in any more. Besides, I have used up all the magazines I had with addresses in them.

According to the very plain hint you dropped on your page in the June issue, the First Staple War is almost pushing van Kampen out of Brass Tacks. This should be taken up with the Board of Directors at once. The only way I see out is to create a new department in the magazine for letters pertaining to the First Staple War only. And, anyway, the war is more important than van Kampen's highly interesting and educational junk.

Am glad to find out what is the matter with me. For years I had feared that I had contracted some rare malady, but Dr. Faden eases my mind by proclaiming that I am merely nuts. Oh, well, that's all right, but I refuse to be nuts, if Wolheim is, too. So let's say that I am nuts, and that he is loony.

Harry Bates' story was the best of the issue, and the SPWSTFM hereby nominates him an honorary member. Six cheers!—Bob (Dictator) Tucker, 210 Grove Street, Bloomington, Illinois.

A Blast of Comment!

Dear Editor:

Here I am for the first time in history! At last I have emerged from my shell! Now for a blast of constructive comment!

First, about these covers! I don't see any cause for comments of any kind. Most people buy a magazine to read, not to howl about the covers. If they want to be art critics, they should take an art magazine, and not a stiff publication.

Second: Lewis F. Torrance: If a stiff magazine does not contain accurate science it has no right to the name. If one must feel nauseated at the mere mention of science, as you seem to, he should confine himself to love stories.

Third: G. Harradan: If what you want is adventure, you should get an adventure magazine. I do not at all agree with your silly viewpoint. I once read one of the "Hawk Carse" effusions—with great mental anguish—and it almost caused me to stop reading science-fiction altogether.

Fourth: These societies for prevention: They are absolutely imbecile, as must be their members and organizers. Dictator Tucker should be executed seven times and then imprisoned for life. Still, that might be a bit strong. Perhaps he is only a self-deluded individual and should be confined to padded surroundings in an institution for the nitratefeeble-minded.

Fifth: I knew that you couldn't keep up the great standard that you have had of late. The

As the Brickbats Fly!

Dear Editor:

Hello there, you Brass Tackers! I'm back again to goad and abuse the craven pen slingers who hit and run among your orderly ranks.

But first, I have a few compliments to give. Mr. Dold, you are first. For years it has been the custom to fill pulp magazines with scratchy pen-and-ink sketches of poor quality and usually indistinct. You have created a new style. You have succeeded in dressing up the pages of *Astonishing* stories! It stands out in unique splendor! No other science-fiction artist is or ever was in your class because you have a separate class of your own making. May you continue to decorate the pages of *Astonishing* stories.

Mr. van Kampen, you are second. Not for your excellent story but for the fair and patient way you have answered your critics. Not once have you become intolerant or lost your dignity. Believe me, fellow, there are few who will dare to cross pens with you in the future.

In my business I have often found that when a man attempts the original he is beaten down. Why? Because it is human nature to be mentally lazy! People hate to accept new concepts! It takes a little brain work to figure them out.

Dogmatic smugness is a fine armor in which to sheathe ignorance or stupidity. I wonder if some of your critics have read Eddington, Jeans, or Abbé Lemaitre. Most of their theories are absolute radicalism as far as practical science is concerned.

Mr. David Bohm, you are third for your fine and sporting criticism of Mr. van Kampen. You have evidently spent a lot of time on it, but at least you refrained from scathing remarks. We need a few more science-fiction fans who can sit down and pen an intelligent criticism, and less of these chronic faultfinders.

Many are the foxes leaping at the other fellow's grapes and falling as did the mythical fox because they haven't the necessary energy or initiative. The sour vinegar of jealousy is a bitter pill guaranteed to cause gastric disturbances of long duration.

Mr. Krackalotsky, or Kaletsky, I shall do you the honor of squeezing you between forefinger and thumb. Since you are presumably a freshman in college, you may not have taken entomology as yet but I am sure your biology instructor will gladly enlighten you.

I hope some day you will carry out your experiment and set fire to a forest, and get enough energy to send a hundred steamships around the world. This would take a lot of steam, no doubt, but I am sure you could accomplish it easily. Be careful that you don't get burned up! Science-fiction will miss you terribly!

Mr. Irmu Kemist, please send me your address so that I can write you one of my cute little notes. Shame on you for your hit-and-dunk method of criticism.

Mr. Keutling, you had better stick to Aristotle or string a necklace of garlic around your neck to stare off the vampires!

Mr. Tucker, you are merely a small ladybug! You do not bite! You do not irritate. You merely tickle. I have no desire to crush or harm you. I shall scratch you gently, for after all, you are a gentleman ladybug. Please pick up your marbles and fly home!

Well, if this letter has been a success I am pleased. Bob Tucker, of course, I was only kidding. I might really like that guy if he would stop kicking and really do some pushing. The other fellows are rotten sports. They criticize unfairly and they can well stand a good crushing.

If, for any reason I have been unjust, I will apologize in another letter to Brass Tacks. Next time, I will pick out the crabs and write them personally.—Hubert Alcock, 301 Willow Avenue, Lyndhurst, New Jersey.

On Amusement and Thought!

Dear Editor:

I have been reading your magazines ever since Street & Smith have had it and for a long time before. I have not had every issue but I have not missed a great many. All this controversy about *The Irrelevant* means nothing to me. I think the whole thing depends on a confusion of the words "work" and "energy."

The *Slycraft* stories are all fine. *The Mightiest Machine* is very good, too. In fact, they are all good. Variety is the spice of life. Astounding realizes that and keeps us interested.

About these fellows who weep and wail for the stories of 1926 to 1928. I would suggest that they go back and read a few of them. Outside of *The Deluge* and *The Land That Time Forgot* and maybe *The Island of Dr. Moreau* they would be sadly disappointed with the re-reading. Science-fiction is like a drug. One requires more and more in order to be satisfied. Would they be satisfied with *The Time Machine* now?

Now, about the chief purpose for writing you: Charles Fort never wrote the collection *Lo!* to be published in a science-fiction magazine. It was a compilation of facts assembled to back up a theory. He did not write to please a reader—to tickle their ears. He had the data and wrote to show the twisting of evidence to ex-

plain those things which to us are unexplainable. His story was tedious, hard to follow, and more hard to believe, but to do it justice it was a collection of astounding stories and not science-fiction.

I think the criticism of *Lo!* shows that credulity, imagination, and the thing that makes them read *Astounding Stories*, is beginning to fossilize. If they wanted entertainment, *Lo!* was certainly disappointing, but if they wanted to think, where could they find more food for thought?

Well, this letter is getting too long, and for the sake of those who would rather be entertained than think, I guess you had better publish a fantasy magazine, or something of a light, fast-moving nature. But if you don't want to be weighed down with destructive criticism, don't publish another true astounding story.—Cleo E. Hook, 317 East 6th Street, Seymour, Indiana.

Tacks That Prick!

Dear Editor:

After looking over issues of the last few months I am afraid that I must say an uncomplimentary word about your May issue. It was putrid, weak, and the worst yet given to us. We science-fiction fans are the most particular people in our universe, and when you issue tripe like the May issue, we kick, and, I think, fairly. The stories were poor, and the cover not suitable for the novel it was to illustrate.

There was but one story in the whole copy which I can justly label "good." It was a very short story by Eando Binder. Congratulations on securing him. His story on white space was very interesting! The illustrations for his story were the best I've ever seen drawn by Marchion, principally because he left out his fantastic idea of engines and other means of power.

The disgust which I've tried to adequately register for the May issue was hard to make sound convincing as I've just completed the June issue, and my nerves are tingling with intense satisfaction.

Whereas the former issue had slid back several notches on the scale, the present issue has blazed forth and nearly compensated. No issue ever published before of any science-fiction magazine has introduced to the public so many stories in one issue that were so expressive, gripping, thought-provocative, so new in plot and high in quality.

This volume will long live in my mind as being the first to enable me—since my start in science-fiction reading in 1927—to mark "X" after the title of every story, with the exception of two, of which I marked one "fair" and the other "poor."

The Invaders, by Don Stuart, received a rating of 98%. Sorry, Hurry Bates, your story must come second, although at any other time it would have been first. Doid's art continues to be the best.—Henry Lewis, Jr., La Roche, South Dakota.

The Day Of Miracles!

Dear Editor:

Thanks for answering my letter and thanks also for the May issue of *Astounding*. Every month this magazine brings home to me the fact that the day of miracles is not over yet.

All the stories were good, as usual. *Earth's Mausoleum* was outstanding. Too bad it was not *Astounding* which secured another of Fear's stories. However, it is doubtful if the others will ever approach your high standard. I don't see how you can keep it up yourself.

The serial by John Tuine was very good and it certainly adds to the prestige of the magazine to have such an author between the covers.

Which reminds me to congratulate Howard Brown on his most remarkable cover this month

—great stuff. Dold is getting better all the time also, his illustration for *The Einstein Express* was a real work of art. Marchioni is not quite so masterful but is also very good.

Keep up the good work.—L. P. Wakefield, 2832 Marshall Way, Sacramento, California.

Challenge of Youth!

Dear Editor:

Although I have read *Astounding Stories* for several years, this is the first letter that I have written to you. As soon as I get the magazine I turn to Brass Tacks. I am glad to see that you are enlarging that department.

The Einstein Express was a classic of science-fiction. It was not easy to comprehend, and had quite an abrupt ending. I think it would have been improved if Mr. Frederick had given a description of the integrator and his habitat.

Pearl's *Earth's Mausoleum* was also excellent, although I believe his Moon-converted-into-Sun idea was slightly off. If the whole of the Sun's heat and light were transported to the Moon, the Earth would soon burn to a crisp and be entirely devoid of plant and animal life. Even though the Moon is smaller than the Sun, it would not lessen the heat.

I also find fault with *Set Your Course by the Star*. It is not accepted theory that space is black, as light cannot be seen unless it strikes an object. For instance: you are in a dark room. You turn on your flashlight and play the light on the wall.

You see the flashlight ray because the light strikes countless little specks of dust that are in the air. If the flashlight were turned on in a complete or nearly complete vacuum, one could not see the light ray until it struck an object, as there would be no dust particles in a vacuum.

Now, in space, which is a vacuum, there are no little dust particles floating around, therefore nothing which the stars' light could fall upon, and so, therefore, complete darkness. What do you say, Brass Tackers?

As to the April issue, all the stories were good, especially *The Lotus Eaters*. Age contained an interesting theory on the mysterious heavy water.

I agree with Harold Keating whose letter appeared in the April Brass Tacks. No bimonthly *Astounding Stories*, please. Even if you can maintain the present quality and quantity of your stories I know that I, for one, would soon tire of science-fiction. I gave up other science-fiction magazines not only because *Astounding Stories* is the best, but because I was afraid that I would soon tire of science-fiction if I read more than one magazine.

Don't print fantastic weird stories like that junk your magazine had a few months ago about a flying dragon emerging from the moon, or some such stuff. Time-traveling stories are good. I also think that time travel is not only possible, but probable.

Disregard those who cry for trimmed pages. Trimming pages involves many technical difficulties, and besides what do these kickers want for a comparatively low price, anyway? They've got scissors and a pair of hands, haven't they?

Brown's covers are getting better. Why not make a duplicate of each cover, minus all titles and names, and put it on the inside of each cover? Most of them are suitable for framing.

I have read and enjoyed *Astounding Stories* for five years and although I am only fourteen years old, I feel that I am an experienced reader.

—Willis Conover, Jr., 2800 Wisconsin Avenue N. W., Washington, D. C.

The Last Word!

Dear Editor:

I have been reading *Astounding Stories* regularly, and wish to tell you that I think each new number surpasses the preceding one. As usual,

the April 1935 *Astounding* was excellent. The stories were all interesting, educational, and well-written. However, the cover painting could have been improved.

The Einstein Express, by Frederick, was astounding! I congratulate *Astounding* for having acquired this new writer. Mr. Frederick made a good start and I wish him success. The editorial *Impressions* was very interesting and I am glad to know that the editor's motto is "all for one—one for all." *Astounding Stories* is sure taking the lead fast!

However, I have one fault with *Astounding Stories* and I offer the following suggestion: That every letter submitted by the readers be followed by an editorial comment. You should have started this long ago, and you are making a grave error by using your present method in Brass Tacks.

I noticed Mr. Wollheim's letter in this April *Astounding*, and it was very interesting. At the present time, there is a great war going on between the SPWSSFTFM and the laopommstfppusa. I am afraid that the Wollheim organization will win.

Evidently, the editor was economizing on the April issue. It had only one wire staple! I wonder if the editor sent me this copy on purpose. Did any of you readers receive a copy with only one wire staple? Next time, Mr. Editor, make up for your drastic error and put three wire staples in my copy.

Now about rocket and space ships that you hear so much about: Let, I, Leroy Christian Bashore, as a medical doctor, philosopher, astronomer, chemist, physicist, and mathematician solve this problem under discussion.

The amount of power necessary to overcome the gravitational influence of the Earth, disregarding air resistance, is approximately 6,000,000 kilogram meters for every kilogram of weight involved. It's of no consequence how great the speed of the ascent is nor does it matter whether the course is a straight line or not.

Distance is the important factor. Because the force of gravity varies directly as the mass, and inversely as the square of the distance, the greatest amount of power is required in the immediate vicinity of the Earth. Once the Earth has been left behind, it matters little in so far as power is concerned, whether we contemplate a journey to the Moon, Mars, or more distant objects.

At present there is no known fuel or explosive capable of delivering 6,000,000 kilogram meters per kilogram. The most powerful fuel which we possess is a mixture of liquid oxygen and hydrogen which gives about 1,700,000 kilogram meters per kilogram.

Consequently there are many who doubt that the problem of space travel is capable of solution. It is contended that it is impossible to lift a body out of the Earth's influence because there is no known fuel able to lift its own weight, let alone a space ship and its contents. The argument seems sound, and even physicists are misled by it.

Actually it is not necessary that the fuel should be carried beyond the Earth's influence. The fuel will be consumed at the onset of the journey, and its energy imparted to the ship. Thus, as a result of fuel consumption, the weight of the ship will continually decrease, while its momentum will progressively increase. In this way, the ship will acquire sufficient kinetic energy to overcome Earth's gravitation. Calculations dealing with the power necessary for an interplanetary journey, therefore, are based on the theory that the bulk of the fuel will be left behind after having given up the energy to the ship, well within the Earth's influence.

I trust that this explanation of what, to the uninitiated, must appear a hopeless disparity between the amount of energy required for an interplanetary voyage, and the amount of power which exists in known fuels, will serve to remove prejudice in this connection, and thus open a way for the renewed interest in rocket research.

I am forever an *Astounding* fan and will be so until doomsday. Leroy Christian Bashore, 310 North 7th Street, Lebanon, Pennsylvania.

"Age" Gets a Share!

Dear Editor:

This is a brickbat directed at *Age* by Clyde Crane Campbell. I am sorry to say that this story is one of the very poorest science-fiction stories I have ever read.

By way of introduction, the isotopes of any element are modifications which differ solely in atomic weight. They have the same chemical properties, which means, per se, that they have the same valence. I cannot understand Mr. Campbell's statement that the valence of deuterium is different from that of hydrogen. It is the same, ± 1 . Does Mr. Campbell know what valence means? Sometimes a heavy isotope will react more slowly than a lighter one, but this difference is usually so slight that it cannot be detected.

If one considers the matter from the point of view of the structure of the atom, a heavier isotope will have more protons and electrons in the nucleus—that is, the part which determines the atomic weight—but it has the same number of excess positive charges in the nucleus, and therefore, the same number of electrons in the orbits outside the nucleus, as a lighter isotope. Since it is the outside electrons which determine the chemical properties of an element, it is apparent that there will be no difference chemically.

All those elements whose atomic weights are not exactly whole numbers are composed of two or more isotopes. Thus chlorine, atomic weight 35.46, is a mixture of Cl weight 34.96 and Cl weight 37.00. Mercury has several isotopes which have been isolated, lead has several, as have cadmium, nitrogen, and nearly every other element. All of these were known years before heavy hydrogen, or "deuterium," as it is called, was discovered.

Deuterium is a modification of hydrogen, which has a nucleus composed of two protons and one electron, with one electron in the outer orbit. Normal hydrogen has one proton and no electrons in the nucleus, with one electron in the outer orbit. It is the loss of this outer electron which gives hydrogen or deuterium its valence of plus one. Because normal hydrogen contains only one proton and one electron, Mr. Campbell's theory of a light hydrogen forming light water to counteract heavy water is obviously absurd.

Mr. Campbell uses the expression "isotope of water." This proves beyond a shadow of doubt that Mr. Campbell has never had even an elementary education in chemistry, for no compound can be an isotope. Even asleep, no chemist would dream of applying the term isotope to anything but an element. Heavy water is the oxide of deuterium, which is the isotope of hydrogen.

Also, where did he get the idea that the formula for deuterium oxide was H_2O_2 ? It is D_2O , analogous to H_2O , not H_2O_2 . That would be a polymer of ordinary water, and while water does exist in a polymeric form, especially in ice, which has the formula $(H_2O)_X$, this has no connection with deuterium oxide.

Let me point out, also, that the men who were electrolyzing water to obtain hydrogen and oxygen would not have obtained deuterium oxide by accident. It is only by stopping the electrolysis at the right point that the deuterium oxide is prevented from being electrolyzed along with the rest of the water. It is not immune to electrolysis, as Mr. Campbell implied.

Deuterium has an atomic weight of 2, hydrogen of 1. This accounts for the fact that hydrogen—that is, the normal mixture of hydrogen and deuterium—has an atomic weight of 1.008 instead of 1.000. This is one of the most important aspects of the discovery of deuterium. It has caused the abandonment of the old theory of difference in compression of the atom.

The molecular weight of D_2O is 20, H_2O is 18. D_2O boils at about $101.5^\circ C$. or $214.7^\circ F$. instead of $100.0^\circ C$. and $212.0^\circ F$. In some cases, such as the hydrolysis of cane sugar, heavy water reacts faster than the light, in some cases more slowly, and usually about the same, for various physical reasons. This is about all the difference that exists.

No evidence has been shown that would indicate that deuterium oxide was toxic. Early experiments showed that tadpoles died in dilute (1%) deuterium oxide, but it was shown later that the water contained nitrous oxide, which accounts for the tadpoles' completely. You would die in nitrous oxide just as readily.

Heavy water is hygroscopic—that is, it tends to take up moisture from the surroundings so as to dilute itself. Any harmful effects of heavy water—if there are any—could be laid to this dehydrating action. Thus there was a faint foundation for Nat Schachner's tale, which was bad enough scientifically. But many other things have a tendency to do this, and are not called poisons.

The few experiments which have been made on the physiological action of deuterium oxide were made either by physical chemists, who knew no physiology, or by damned fools who knew nothing. It would take many years of careful experimentation, and a lot of heavy water, to determine its physiological action.

If it differs in any way from ordinary water, it is in the direction of slowing the life processes, but this is doubtful at best. The thing to do is to feed it to rats in place of regular water for several generations. This, at the present price of deuterium oxide, is impossible. To use the dilute form, 1/5%, that is used, is silly. It shows nothing. That is only about ten to twenty times as rich a mixture as occurs naturally in some places—and has never proved harmful.

Heavy water would be eliminated from the body as ordinary water, by evaporation—for it does evaporate, you know—and by the normal excretions of the body. It would be easy enough to tell if it accumulated by taking dogs, killing them, and dividing the water out, then measuring its density. In fact, I think it has been done, and no accumulation was shown. It is some nitwit's brain storm, for there are a lot of easier reasons for old age. I was even taught that calcium might have something to do with it.

If it did accumulate over several generations it might entirely replace normal water, because of the fact that a baby would be born with the same percentage as her mother, and her children would have that plus any she may have accumulated during life. This would simply mean that the race would adapt itself, and D_2O would cease to be harmful. It does not accumulate.

Although the study of deuterium oxide has much theoretical value in the realm of subatomic phenomena, it has no use in the making of drugs, or any other practical form. It has attracted a lot of attention because it struck the fancy of the newspapermen, who made the public heavy water conscious.

There has been more miscellaneous misinformation published about it in popular books and periodicals than I believed possible. To get any real information, read the "Journal of the American Chemical Society." There are fads in science as well as dress, and most chemists went bug on the subject for a while. That is dying down now, and the work is being left to a few laboratories, since it has no practical value. It is neither the elixir of life, nor of age, and most chemists feel that Urey did not deserve the Nobel laureate for it, since it is by no means the first isotope isolated, nor the most difficult to isolate. However, he has it, and we can only hope that his next work will make up for any lack in his last.

In concluding, let me mention that several men have drunk from a cubic centimeter to a small glass full with no ill effects except a slight burning of the lips and shock, due to its dehydrating action. See April *Popular Science* for one example.

I shall not bother to discuss the rather muddled style of the story, caused, no doubt, by the author's lack of definite knowledge, or the bad taste of the propaganda on page 138. I have already said too much. But please have some high-school boy check the science of Mr. Campbell's next effort.

I am sorry to have offered only destructive criticism. I am also sorry to have taken up

your time. Next time I hope to have happier things to say.

Weinbaum's *Lotus Eaters* was up to his usual high standard, and the best in the issue. To write a good sequel is much harder than the first story, and requires a fine sense of proportion in a scientific tale especially. He ran the hurdles in record time.

We are always glad to welcome the old masters when they come with good stories, and Vincent wrote a very good tale in his *Procler of the Wastelands*. Campbell finished his *Mightiest Machine* with all the sweeping style and display of titanic forces for which we love him.—Ramón F. Alvarez del Rey, 1016 Massachusetts Avenue, Washington, D. C.

Impressions!

Dear Editor:

Impressions of the new year: That the January issue was not very well rounded, having two energy yarns, two insectales, no thought-variant, and a cover I did not think very inspiring to start off 1935. *Flight on Titan* and *Star Ship Inevitable* are the best stories.

That the February number had a great cover, one which would have been much more suitable for opening the year. Best story, *Parasite Planet*, a super science-adventure fantasy yarn: first-class, memorable! With thanks, too, for those fine stories *The Machine* and *Great Gold*; and appreciation to Nat Schachner, the ace of thought-variant authors, for great enjoyment out of *The Ultimate Metal*.

That the March edition's best were *Proxima Centauri* and *Blindness*, the issue being distinguished by Elliot Dold, Jr.'s—glad to see you've got his name full and right, now—astounding illustration for the opening part of instalment four, *The Mightiest Machine*.

That *Lotus Eaters*, *Age*, and *Procler of the Wastelands*, were the best of the April issue, with part one of *The Einstein Express* rich in promise for its conclusion.

Such are my brief opinions of the first four numbers of the year. A few further impressions and suggestions: do not believe Frank Belknap Long, Jr. has got the mentions he should for his series of unusual and different picturizations of different possible futures. I have generally enjoyed each very well. You should clear up about bi-monthly, by the way, which means every two months, whereas readers mean either bi-weekly or semi-monthly.

Am quite content to have you delegate all drawings to Mr. Dold; but if you are going semi-monthly and will employ other artists, I should certainly prefer Clay Ferguson—another inspired Jr.!—to any other artist I know, excepting, of course, Paul, and possibly ill-fated Miller. Clay is the star of to-morrow in my opinion, or else I never saw an str. illustration before! He's tops—what I mean, a superlative pen-and-brush welder.

Edmond Hamilton, Francis Flagg, Ray Cummings, and Dr. Keller, are recognized first-raters who are still missing from Astounding. I hope to see stories by them soon. Also, hope Jack Williamson will be over his illness and back very soon. And Arthur J. Burks ought to have some appearances.

Guess that's the works for this time. Oh, yes, except to say that I guess I'll be sending in my application to that sterling—Kenneth Sterling—organization, the IAOPUMUMFSTFPUSA, soon. The SPWSSTFM probably wouldn't have me, whereas I am expectant the I—A will probably pass a bill to make me a super extra-excellent honorary first-class A-1 contributive-to-the-cause member, at once; if not maybe even Vice Grand Exalted Booleywag. Can you see why?—Forrest J. Ackerman, 530 STAPLES Avenue, San Francisco, California.

The Good Old Days!

Dear Editor:

I have been reading Astounding Stories since you have taken it over, and I must say it isn't what it used to be in the good old days. Although you print more stories in one issue than any other magazine, the stories lack that good old tang that the old Astounding Stories gave us. The stories are much too technical to make enjoyable reading.

The thought-variant idea seems to meet favor with some readers, but it's nuts with me. The thought-variant stories are so far-fetched and vague that it's difficult for one to picture the scene described by the author. Take *The Einstein Express* for instance. The first part wasn't so bad, but the second! Whew! I just couldn't picture a mind floating around in space—and empty space, at that!

Another thing about *The Einstein Express*: Just how did the operator in one sphere measure his voltage? I always thought, and still do, that voltage was merely the difference in potential from one pole to the other. The author first said the voltage was 8,000. Next thing you know the voltage is 16,000 by the simple processes of combining the voltages from both the spheres. The voltage is the same whether measured from positive to negative or negative to positive. You can't measure it both ways, and combining the two have twice the voltage. Or can you?

About the best story you printed so far was *Rebirth*, and that was a long time ago. Of course, you have good stories once in a while, but not often enough. Since the January issue, the stories that I liked the best were: *Flight on Titan*, *The Ultimate Metal*, *Parasite Planet*, *Age*, *The Lotus Eaters*, *The Plane Compass*. The rest of the stories I didn't enjoy or else couldn't read at all.

As for the cover illustrations, they're either space ships or vastly out of proportion with the planet they're approaching or some nightmare of a picture that drives one nuts trying to figure out what it is. In the good old Astounding, Wesso would draw pictures that would attract one to the magazine, and not repel like they do now.—E. Guanella, Rt. 3, Box 154, Santa Rosa, California.

Tucker, Betrayed!

Dear Editor:

Success at last crowns the brows of the mighty cohorts of the IAOPUMUMFSTFPUSA! Tucker has capitulated! He has used wire staples in binding his D'Journal! He has therefore betrayed his deluded followers, betrayed his cause, proven false under the strain of combat. The righteons will prevail! The SPWSSTFM lies exposed at last, a hollow mockery, a mass of falsehoods and hypocrisy, spreading victorious propaganda throughout the nation.

But we do not rest. No, not until we have made our mighty answer to the pseudo-"dictator's" challenge. We shall crush him to the earth in our next issue of the Polymorphaneulated Leucocyte. Let all those who like fair play, who believe in the cause of right and in the ancient tradition under which science-fiction has grown to its present standards, send your names in membership.

Mr. Editor, you have no idea of the hard and fierce combat that has been raging. You can only faintly glimpse the subtle intrigues that lay beneath the stapling of D'Journal. Spy and counterspy. Tucker thought that Clark and Selikowitz were loyal to him. Little did he realize that they were the cleverest of my agents, working themselves into the depths of his confidence, then to undermine him, and staple D'Journal. Oh, temporal! Oh, mores! Was there ever a war like this! We shall settle him with laughter, drown him in ridicule, and annihilate him in a flood of jeers!—Donald A. Wohlhelm, 801 West End Avenue, New York City, N. Y.

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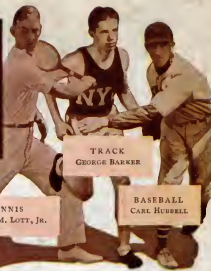


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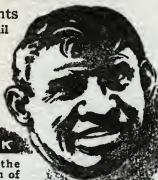
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